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RED BOOK

Tractor and equipment specifications
Hydraulic components data
Nebraska test reports
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The Nebraska Tractor Test Law

Purpose of the Law—The Nebraska Tractor Test Law originated in 1919 for the purpose of verifying advertising claims on tractors offered for sale to Nebraska farmers.

Its position as the only independent test laboratory in the United States devoted to the evaluation of tractor performance proved of unique value to the industry. The Agricultural Tractor Test Code used in the Nebraska Tests was developed with the approval and assistance of the American Society of Agricultural Engineers and the Society of Automotive Engineers, and is revised and updated periodically as the need arises. The Test Code (ASAE S209.4 or SAE J706c) is published in the ASAE Yearbook and SAE Handbook.

Provisions of the Law—Stated briefly, the Nebraska Tractor Test Law provides:

That a stock unit of each agricultural tractor model sold in Nebraska shall be tested and passed upon by a board of three engineers under the supervision and direction of the University of Nebraska. Each tractor must be certified as a stock model and will be equipped with the common power consuming accessories. An official representative of the manufacturer is present during the test to see that the performance meets company standards.

The Department of Agriculture shall deny to any manufacturer the right to do business in the State on complaint of two or more bona fide customers that the company has failed to maintain an adequate service station with a full supply of replacement parts within the state and within reasonable distance of customers.

The law further states that it shall be unlawful to publish excerpts from any official test in advertising material without publishing the entire report.

The provisions of the Nebraska Test Law do not apply to any tractor the engine of which develops less than 20 horsepower, or to tractors manufactured, sold and used for heavy construction when identical units are not sold and used for agricultural purposes.

Explanation of Test Reports

General

Tractors are tested at the University of Nebraska according to the Agricultural Tractor Test Code approved by the American Society of Agricultural Engineers and the Society of Automotive Engineers or official Nebraska test procedure.

The manufacturer selects the tractor to be tested and certifies that it is a stock model. Each tractor is equipped with the common power consuming accessories such as power steering, power lift pump, generator, etc., if available. Power consuming accessories may be disconnected only when the means for disconnecting can be reached from the operating station. An official representative of the company is present during the test to see that the tractor gives its optimum performance. Additional weight may be added to the tractor as ballast if the manufacturer recommends use of such ballast. The static tire loads and the tire inflation pressures must conform to the specifications of Tire and Rim Association.

Preparation for Test

The engine crankcase is drained and refilled with new oil conforming to specifications in the operator's manual. The operator's manual is also used as the guide for selecting the proper fuel and for routine lubrication and maintenance operations.

The tractor is limbered up for a minimum of three hours on the drawbar. Preliminary adjustment of the tractor is permitted at this time. Any parts added or replaced during the limber-up run, or any subsequent runs, are mentioned in the individual test reports. The tractor is equipped with approximately the amount of added ballast that is to be used during the drawbar runs.

PTO Performance

Power take-off performance runs are made by connecting the power take-off to a dynamometer. During a preliminary power take-off run the manufacturer's representative may make adjustment for the fuel, ignition or injection timing and governor control settings. These settings must be maintained for the remainder of the test. The manually operated governor control mechanism is set to provide the high-idle speed specified by the manufacturer. During the power take-off runs an ambient air temperature of approximately 75°F. (24.0°C) is maintained.

Maximum power is obtained at the rated engine speed specified by the manufacturer with the governor control lever set for maximum power. This same setting is used for all subsequent PTO runs. Time of the run is two hours. Whenever the power take-off speed during the maximum power run differs from the speeds set forth in the ASAE and SAE standards, an additional run is made at either 540 or 1000 rpm of the power take-off shaft. Time of this run is one hour.

Drawbar Performance

Maximum drawbar power is shown for the normal field speed selected by the manufacturer. All engine adjustments are the same as those used in the power take-off runs. If the manufacturer specifies a different rated engine speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified.

Maximum drawbar power is determined within the following limits: (1) slip of the drivers must not exceed 15% for pneumatic tires on the concrete test course or 7% for steel cleats on the well packed earthen test course, (2) ground speeds must not exceed 10 miles per hour, (3) safe stability limits of the tractor must not be exceeded, (4) no other operating limit of the tractor must be exceeded. Drawbar load is applied until the manufacturer's rated engine speed is obtained with maximum governor control lever setting. Travel speed, drawbar pull and other data are recorded over two 500-foot straight level areas.

Fuel consumption is determined at the manufacturer's selected travel speed with the drawbar pull set: (1) to give rated engine rpm, (2) 75% of the pull at rated engine rpm, (3) 50% of the pull at rated engine rpm, and (4) maintaining the same load and travel speed as in (3) by shifting to a higher gear and reducing the engine rpm.

This summary shows the drawbar horsepower, corresponding travel speed and fuel consumption at 100%, 75% or 50% loads, and 50% of pull at reduced engine speed.

Also shown is the maximum drawbar horsepower produced for two 500-foot travel sections and corresponding travel speed, the maximum drawbar pull and the corresponding drive-wheel slippage.

In addition, the "lugging ability" obtained by increasing the load so that the full throttle engine speed drops to 80% of rated is given as a percent increase with respect to the pull at rated engine rpm.

The maximum drawbar horsepower and the corresponding speed and drawbar pull for other selected gears or travel speeds are shown in the individual test reports.

Sound Measurement

Sound is recorded during each of the Drawbar Performance runs as the tractor travels on a straight section of the test course. The dB(A) sound level is obtained with the microphone located near the right ear of the operator. Bystander sound readings are taken with the microphone placed 25 feet (7.5 m) from the line of travel of the tractor. An increase of 10dB(A) will approximately double the loudness to the human ear.

Individual copies of any test report, annual summary booklets or annual subscription (at $4.50) are available. For complete information write to **Department of Agricultural Engineering, University of Nebraska—Lincoln, Lincoln, Nebraska 68583.**

NEBRASKA TRACTOR TEST 1546—CASE 1594 SYNCHROMESH DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air into turb	Air from turb	Barometer inch Hg (kPa)
Rated Engine Speed—Two Hours (PTO Speed—1123 rpm)								
85.90 (64.06)	2300	5.176 (19.600)	0.421 (0.256)	16.59 (3.268)	192 (88.9)	64 (17.8)	75 (24.1)	28.78 (97.50)
Standard Power Take-off Speed (1000 rpm)—One Hour								
80.83 (60.28)	2040	4.744 (17.955)	0.410 (0.249)	17.04 (3.357)	192 (89.0)	64 (17.8)	75 (24.1)	28.74 (97.80)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
75.08 (55.99)	2364	4.555 (17.240)	0.424 (0.273)	16.48 (3.247)	191 (88.3)	64 (17.8)	76 (24.2)	....
0.00 (0.00)	2425	1.571 (5.188)	....	....	186 (85.3)	63 (16.9)	75 (23.8)	....
38.24 (28.51)	2409	2.832 (10.714)	0.517 (0.315)	13.50 (2.660)	187 (86.1)	63 (17.2)	74 (23.3)	....
66.58 (64.41)	2300	5.186 (19.631)	0.419 (0.255)	16.66 (3.281)	192 (88.9)	63 (17.2)	74 (23.3)	....
19.18 (14.30)	2414	2.084 (7.888)	0.759 (0.461)	9.20 (1.813)	187 (85.8)	63 (17.2)	74 (23.3)	....
56.06 (42.40)	2387	3.614 (13.679)	0.444 (0.270)	15.75 (3.100)	188 (86.7)	63 (17.3)	74 (23.3)	....
Av 46.96 (34.37)	2383	3.273 (12.391)	0.497 (0.303)	14.04 (2.766)	188 (86.9)	63 (17.3)	74 (23.5)	28.78 (96.50)

The following performance figures apply to tractors after chassis S/N 11221501.

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Coolant out	Air into turb	Air from turb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (L2) Gear											
72.17 (53.82)	5115 (22.74)	5.29 (8.52)	2500	6.98	5.065 (19.166)	0.490 (0.298)	14.26 (2.808)	191 (88.1)	50 (3.6)	47 (8.3)	29.19 (98.55)
75% of Full at Maximum Power—Ten Hours 7th (L2) Gear											
58.01 (43.26)	3911 (17.40)	5.04 (9.08)	2401	5.09	4.338 (16.422)	0.515 (0.313)	13.56 (2.671)	191 (88.1)	29 (-1.5)	53 (0.4)	29.20 (98.87)
50% of Full at Maximum Power—Two Hours 7th (L2) Gear											
40.27 (30.02)	2908 (11.69)	5.79 (9.32)	2424	3.54	3.359 (12.714)	0.505 (0.330)	11.90 (2.361)	191 (88.1)	37 (2.8)	44 (6.7)	29.18 (98.52)
50% of Full at Reduced Engine Speed—Two Hours 10th (L3) Gear											
40.23 (30.00)	2610 (11.61)	5.78 (9.30)	1403	3.65	2.700 (10.220)	0.400 (0.245)	14.90 (2.993)	187 (86.1)	43 (6.1)	44 (6.7)	28.90 (97.57)
MAXIMUM POWER IN SELECTED GEARS											
67.33 (50.21)	8331 (37.06)	5.09 (4.88)	2354	14.64	4th (L1) Gear			191 (88.1)	35 (1.7)	39 (3.9)	29.23 (98.71)
68.32 (51.69)	7561 (33.72)	5.43 (5.32)	2290	11.67	5th (LS3) Gear			190 (87.5)	36 (2.2)	40 (4.4)	29.24 (98.74)
70.99 (52.64)	6494 (28.88)	6.08 (5.34)	2301	9.27	6th (HS2) Gear			190 (87.8)	36 (2.2)	41 (5.0)	29.25 (98.71)
73.54 (54.84)	5215 (23.20)	5.29 (8.51)	2500	7.08	7th (L2) Gear			191 (88.1)	39 (3.9)	46 (7.8)	29.20 (98.60)
72.84 (54.32)	4180 (18.63)	6.52 (10.50)	2290	5.63	8th (H1) Gear			190 (87.8)	37 (2.8)	42 (5.6)	29.25 (98.71)
70.77 (52.77)	3306 (16.00)	7.38 (11.88)	2300	4.78	9th (HS3) Gear			190 (87.5)	37 (2.8)	43 (6.1)	29.22 (98.67)
70.01 (52.21)	2778 (12.35)	9.45 (15.21)	2290	3.76	10th (L3) Gear			190 (87.5)	37 (2.8)	44 (6.7)	29.22 (98.67)

Department of Agricultural Engineering

Dates of Test: October 24 to November 2, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60° F** *(15/15°C)* 0.8585 **Fuel weight** 6.962 lbs/gal *(0.837 kg/l)* **Oil** SAE 30 **API service classification** SF-CD **To motor** 3.090 gal *(11.698 l)* **Drained from motor** 2.572 gal *(9.735 l)* **Transmission and hydraulic lubricant** Case TFD fluid **Final drive lubricant** Case ETHD fluid **Total time engine was operated** 36.5 hours.

ENGINE: Make Case Diesel **Type** six cylinder vertical **Serial No.** 3S0002 11465511 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.939" × 4.500" *(100 mm × 114.3 mm)* **Compression ratio** 16 to 1 **Displacement** 329 cu in *(5392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper elements with sediment bowl and screen **Muffler** vertical **Cooling medium** **temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** "154/REB/11219518" **Tread width** rear 61" *(1549 mm)* to 85" *(2159 mm)* front 60" *(1524 mm)* to 88" *(2235 mm)* **Wheel base** 100" *(2540 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.3" *(842 mm)* Vertical distance above roadway 56.7" *(932 mm)* Horizontal distance from center of rear wheel trend 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.4 *(2.3)* second 2.3 *(3.7)* third 2.8 *(4.5)* fourth 3.5 *(5.6)* fifth 3.9 *(6.3)* sixth 4.5 *(7.2)* seventh 5.7 *(9.2)* eighth 6.9 *(11.1)* ninth 7.8 *(12.6)* tenth 9.9 *(15.9)* eleventh 11.4 *(18.3)* twelfth 19.7 *(31.7)* **reverse** 2.5 *(3.7)*, 4.6 *(7.4)*, 5.8 *(9.3)*, 11.6 *(18.7)* **Clutch** single dry disc hydraulically actuated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 148" *(3.76 m)* left 148" *(3.76 m)* (on concrete surface without brake) right 176" *(4.47 m)* left 176" *(4.47 m)* **Turning space diameter** (on concrete surface with brake applied) right 300" *(7.85 m)* left 309" *(7.85 m)* (on concrete surface without brake) right 364" *(9.25 m)* left 364" *(9.25 m)* **Power take-off** 540 rpm at 2077 engine rpm and 1000 rpm at 2048 engine rpm **Unloaded tractor mass** 9170 lb *(4160 kg)*.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (L2) GEAR

Crankshaft Speed rpm	2300	2070	1837	1610	1375	1148	914
Pull—lbs (kN)	5215 (23.20)	5572 (24.79)	5808 (26.30)	6085 (27.07)	6083 (27.06)	6080 (27.05)	5825 (25.90)
Increase in Pull %	0	7	13	17	17	17	12
Power—Hp (kW)	73.54 (54.84)	70.31 (52.43)	65.84 (49.10)	59.21 (44.15)	50.60 (37.63)	42.21 (31.48)	32.29 (24.08)
Speed—Mph (km/h)	5.29 (8.51)	4.73 (7.62)	4.18 (6.73)	3.68 (5.87)	3.11 (5.01)	2.80 (4.18)	2.08 (3.35)
Slip %	7.08	7.56	8.08	8.55	8.55	8.40	8.00

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	85.0
75% of Full at Maximum Power—Ten Hours	82.0
50% of Full at Maximum Power—Two Hours	83.5
50% of Full at Reduced Engine Speed—Two Hours	78.5
Bystander in 11th (H2) gear	86.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 10 (110)	Two 18.4-34; 6; 10 (110)
Ballast	—Liquid (each)	802 lb (364 kg)	None
	—Cast iron (each)	2105 lb (955 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 10.00-16; 8; 44 (303)	Two 10.00-16; 8; 44 (303)
Ballast	—Liquid (each)	None	None
	—Cast iron (each)	90 lb (41 kg)	None
Height of Drawbar		20 in (510 mm)	20 in (510 mm)
Static Weight with Operator	—Rear	7080 lb (3574 kg)	6805 lb (2060 kg)
	—Front	3230 lb (1461 kg)	2040 lb (1379 kg)
	—Total	11160 lb (5055 kg)	9845 lb (4239 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa) Location	2325 lift cylinder	16050	
Hydraulic oil temperature °F (°C) Location	170 drain plug	77	
	Maximum	Lift Capacity	Lift Capacity for Transport
QUICK ATTACH CATEGORY	no II		*not measured
LOAD lbs (kg) TIME sec	6002 2.78	2723	
HITCH POINT MOVEMENT in (mm)			
Lowest position	12.0	305	
Top of timed range	36.0	914	
Highest position	36.0	914	
LOAD CG MOVEMENT in (mm)			
Lowest position	11.9	303	
Top of timed range	36.4	924	
Highest position	36.2	919	

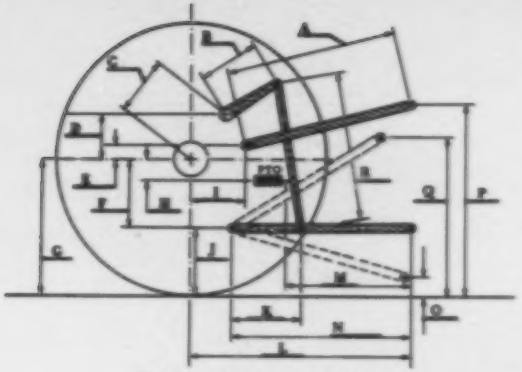
*Implement load capacity for transport purposes not specified by manufacturer.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 170°F *(76.6°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The drawbar performance figures on this report apply to tractors after chassis S/N 11221501.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1546, December 5, 1984.

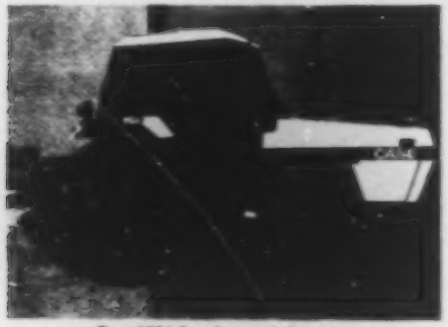
LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

A	20.1	
B	9.3	
C	10.2	
D	10.1	
E	11.4	
F	7.3	
G	25.6	
H	4.4	
I	7.3	
J	21.3	
K	13.0	
L	24.0	
M	23.2	
N	32.0	
O	8.3	
P	40.3	
Q	23.6	
R	24.3	



Case 1594 Synchromesh Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1547—CASE 1594 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1125 rpm)								
85.54 (63.79)	2500	5.232 (19.803)	0.427 (0.260)	16.38 (3.221)	195 (89.4)	68 (20.3)	75 (24.0)	29.08 (98.48)
Standard Power Take-off Speed (1000 rpm)—One Hour								
81.94 (61.11)	2048	4.661 (18.399)	0.414 (0.252)	16.86 (3.321)	195 (89.5)	70 (20.9)	76 (24.3)	29.01 (97.96)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
73.96 (55.15)	2339	4.389 (17.371)	0.433 (0.264)	16.12 (3.175)	190 (87.5)	68 (20.0)	75 (22.8)	....
0.00 (0.00)	2449	1.461 (5.530)	....	....	185 (85.0)	68 (20.0)	75 (22.8)	....
38.07 (28.39)	2407	2.922 (11.060)	0.536 (0.326)	13.05 (2.567)	186 (85.6)	68 (20.0)	74 (23.1)	....
85.16 (63.50)	2290	5.246 (19.859)	0.430 (0.262)	16.25 (3.198)	192 (88.9)	69 (20.6)	74 (23.3)	....
19.14 (14.27)	2425	2.294 (8.344)	0.804 (0.489)	8.68 (1.711)	185 (85.0)	69 (20.6)	75 (23.6)	....
56.20 (41.91)	2371	3.730 (14.118)	0.465 (0.282)	15.07 (2.969)	187 (86.1)	68 (20.0)	74 (23.1)	....
Av 48.42 (36.11)	2381	3.359 (12.713)	0.516 (0.314)	13.33 (2.644)	187 (86.3)	68 (20.2)	74 (23.1)	29.00 (97.93)

The following performance figures apply to tractors after chassis S/N 11221501.

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (3-3) Gear											
69.37 (51.73)	4766 (21.20)	5.46 (8.78)	2300	6.81	5.106 (19.328)	0.514 (0.313)	13.59 (2.676)	192 (88.9)	60 (15.6)	66 (18.6)	28.48 (96.16)
75% of Pull at Maximum Power—Ten Hours 7th (3-3) Gear											
55.94 (41.71)	3827 (16.13)	5.78 (9.31)	2385	4.79	4.271 (16.167)	0.535 (0.326)	13.10 (2.580)	189 (87.0)	46 (7.7)	55 (12.7)	28.97 (97.83)
50% of Pull at Maximum Power—Two Hours 7th (2-3) Gear											
38.14 (28.44)	2422 (10.77)	5.91 (9.50)	2397	3.29	3.330 (12.605)	0.610 (0.371)	11.45 (2.256)	188 (86.7)	50 (14.7)	66 (18.9)	28.48 (96.17)
30% of Pull at Reduced Engine Speed—Two Hours 10th (3-2) Gear											
30.30 (28.56)	2421 (10.77)	5.93 (9.53)	1501	3.18	2.764 (10.464)	0.566 (0.307)	13.85 (2.729)	188 (86.7)	58 (14.2)	65 (18.1)	28.50 (96.22)
MAXIMUM POWER IN SELECTED GEARS											
62.14 (46.34)	8198 (36.47)	2.84 (4.57)	2332	14.98	4th (2-1) Gear			190 (87.8)	61 (16.1)	64 (17.8)	28.46 (96.11)
65.25 (48.65)	7528 (33.48)	3.25 (5.23)	2290	12.51	5th (1-4) Gear			192 (88.6)	58 (14.4)	68 (20.0)	28.67 (96.81)
68.10 (50.78)	6850 (27.80)	4.09 (6.58)	2299	9.12	6th (2-2) Gear			193 (89.2)	58 (15.0)	69 (20.6)	28.72 (96.98)
70.59 (52.64)	4842 (21.54)	5.47 (8.80)	2290	6.64	7th (2-3) Gear			192 (88.9)	59 (15.0)	68 (20.0)	28.68 (96.85)
69.11 (51.54)	3999 (17.79)	6.50 (10.46)	2299	5.38	8th (3-1) Gear			193 (89.2)	59 (15.0)	69 (20.6)	28.71 (96.95)
69.15 (51.55)	3394 (15.10)	7.84 (12.29)	2298	4.60	9th (2-4) Gear			192 (88.9)	59 (15.0)	69 (20.6)	28.70 (96.92)
67.74 (50.51)	2807 (12.48)	9.05 (14.57)	2299	3.58	10th (3-2) Gear			192 (88.9)	59 (15.0)	69 (20.6)	28.69 (96.88)

Department of Agricultural Engineering

Dates of Test: October 25 to 30, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60° F** *(15/15°C)* 0.8385 **Fuel weight** 6.982 lbs/gal *(0.837 kg/l)* **Oil** SAE 30 **API service classification** SF-CD **To motor** 3.060 gal *(11.584 l)* **Drained from motor** 2.574 gal *(9.744 l)* **Transmission and hydraulic lubricant** Case TFD fluid **Final drive lubricant** Case ETHB fluid **Total time engine was operated** 37.0 hours.

ENGINE: **Make** Case Diesel **Type** six cylinder vertical **Serial No.** 330002 11465518 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.939" × 4.500" *(100 mm × 114.3 mm)* **Compression ratio** 16 to 1 **Displacement** 329 cu in *(5392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper elements with sediment bowl and screen **Muffler** vertical **Cooling medium** **temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** *154/BJD/11219781* **Tread width** rear 61" *(1549 mm)* to 85" *(2159 mm)* front 60" *(1524 mm)* to 88" *(2235 mm)* **Wheel base** 100" *(2540 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.6" *(853 mm)* Vertical distance above roadway 36.7" *(932 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.5 *(2.4)* second 2.1 *(3.4)* third 2.7 *(4.4)* fourth 3.5 *(5.3)* fifth 3.7 *(6.0)* sixth 4.5 *(7.2)* seventh 5.9 *(9.5)* eighth 6.9 *(11.1)* ninth 8.0 *(12.9)* tenth 9.4 *(15.1)* eleventh 12.3 *(19.8)* twelfth 16.7 *(26.9)* reverse 5.5 *(5.6)*, 4.8 *(7.7)*, 6.3 *(10.1)*, 8.6 *(13.8)* **Clutch** single dry disc hydraulically actuated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 148" *(3.76 m)* left 148" *(3.76 m)* (on concrete surface without brake) right 176" *(4.47 m)* left 176" *(4.47 m)* **Turning space diameter** (on concrete surface with brake applied) right 309" *(7.85 m)* left 309" *(7.85 m)* (on concrete surface without brake) right 364" *(9.25 m)* left 364" *(9.25 m)* **Power take-off** 540 rpm at 2077 engine rpm and 1000 rpm 2048 engine rpm **Unladen tractor mass** 9290 lb *(4214 kg)*.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (3-3) GEAR

Crankshaft Speed rpm	2290	2072	1836	1686	1374	1145
Pull—lbs (kN)	4942 (21.94)	5256 (23.40)	5394 (24.00)	5734 (25.46)	5745 (25.56)	5715 (25.41)
Increase in Pull %	0	10	16	18	19	18
Power—Hp (kW)	70.30 (52.44)	69.57 (51.73)	64.26 (47.92)	57.36 (42.78)	49.25 (36.71)	40.80 (30.43)
Speed—Mph (km/h)	5.47 (8.80)	4.88 (7.84)	4.31 (6.93)	3.76 (6.05)	3.21 (5.17)	2.68 (4.31)
Slip %	8.84	7.48	7.86	8.26	8.13	8.13

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	80.5
75% of Pull at Maximum Power—Ten Hours	82.1
50% of Pull at Maximum Power—Two Hours	83.5
50% of Pull at Reduced Engine Speed—Two Hours	80.3
Bystander in 12th (3-4) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 8; 16 (110)	Two 18.4-34; 8; 16 (110)
Ballast	—Liquid (each)	478 lb (217 kg)	None
	—Cast Iron (each)	300 lb (132 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 10.00-16; 8; 44 (303)	Two 10.00-16; 8; 44 (303)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb (27 kg)	None
Height of Drawbar		20 in (510 mm)	20 in (510 mm)
Static Weight with Operator	—Rear	7970 lb (3615 kg)	6045 lb (2670 kg)
	—Front	3240 lb (1470 kg)	3130 lb (1415 kg)
	—Total	11210 lb (5085 kg)	9480 lb (4295 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa)	2350	16200	
Location	lift cylinder		
Hydraulic oil temperature °F (°C)	189	76	
Location	drain plug		
	Maximum Lift Capacity		Lift Capacity for Transport*
QUICK ATTACH CATEGORY	no II		*not measured
LOAD lbs (kg)	6002	2723	
TIME sec	2.65		
HITCH POINT MOVEMENT in (mm)			
Lowest position	13.3	337	
Top of timed range	**36.5	921	
Highest position	36.5	927	
LOAD CG MOVEMENT in (mm)			
Lowest position	12.6	319	
Top of timed range	35.9	913	
Highest position	36.5	922	

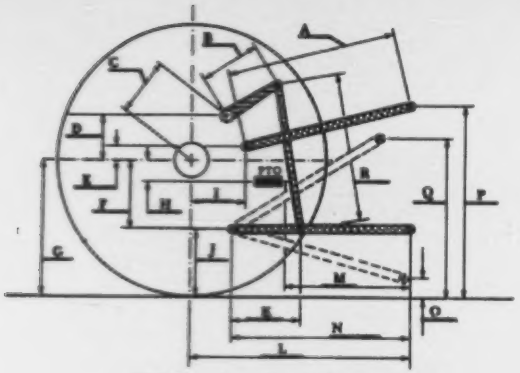
*Implement load capacity for transport purposes not specified by manufacturer.
**The observed power range 23.3" (590 mm) does not meet the minimum power range 24" (610 mm) specified by ASAE Standard S217.10

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 179°F *(81.9°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The drawbar performance figures on this report apply to tractors after chassis S/N 11221501.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1547, December 3, 1984.

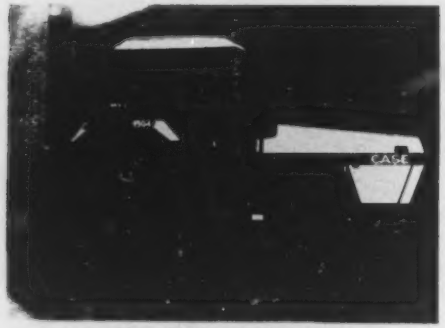
LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	30.6	*778*
B	9.5	*241*
C	10.2	*258*
D	10.1	*257*
E	11.4	*289*
F	7.9	*200*
G	29.4	*746*
H	–0.4	*–10*
I	7.0	*178*
J	21.5	*546*
K	19.0	*483*
L	38.0	*965*
M	25.2	*641*
N	38.0	*965*
O	8.0	*203*
P	40.5	*1029*
Q	33.5	*851*
R	24.8	*629*



Case 1594 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1525 — CASE 2094 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—998 rpm)								
110.50 (82.40)	2100	7.175 (27.157)	0.455 (0.276)	15.40 (3.694)	187 (86.1)	65 (18.3)	75 (23.8)	28.96 (97.80)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
97.14 (72.44)	2170	6.561 (24.837)	0.473 (0.288)	14.80 (2.916)	184 (84.2)	65 (18.3)	74 (23.3)	....
0.00 (0.00)	2302	2.310 (8.744)	....	....	174 (78.9)	66 (18.9)	75 (23.9)	....
49.97 (37.26)	2236	4.341 (16.434)	0.608 (0.370)	11.51 (2.267)	181 (82.8)	66 (18.6)	76 (24.2)	....
111.42 (83.09)	2100	7.230 (27.368)	0.454 (0.276)	15.41 (3.036)	187 (86.1)	66 (18.6)	75 (23.6)	....
25.33 (18.89)	2266	3.373 (12.767)	0.932 (0.567)	7.51 (1.480)	175 (79.4)	65 (18.3)	74 (23.1)	....
73.99 (55.17)	2205	5.366 (20.311)	0.508 (0.309)	13.79 (2.716)	183 (83.6)	66 (18.9)	73 (23.9)	....
Av 59.84 (44.63)	2213	4.884 (18.418)	0.571 (0.347)	12.26 (2.416)	181 (82.5)	66 (18.6)	75 (23.7)	28.94 (97.73)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (3-2) Gear											
98.66 (73.57)	5851 (26.02)	6.32 (10.18)	2099	4.45	7.143 (27.039)	0.507 (0.308)	13.81 (2.721)	192 (88.6)	70 (21.1)	76 (24.2)	29.03 (98.01)
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
79.36 (59.18)	4443 (19.76)	6.70 (10.78)	2195	3.26	6.136 (23.226)	0.541 (0.329)	12.93 (2.348)	190 (87.6)	70 (20.9)	74 (23.2)	28.86 (97.44)
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
54.15 (40.38)	2902 (13.18)	6.96 (11.03)	2219	2.05	4.807 (18.197)	0.621 (0.378)	11.27 (2.219)	188 (86.4)	73 (22.8)	82 (27.5)	28.87 (97.47)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
54.20 (40.41)	2962 (13.18)	6.86 (11.04)	1456	2.09	3.850 (14.574)	0.497 (0.302)	14.08 (2.773)	189 (86.9)	73 (22.5)	83 (28.1)	28.83 (97.34)
MAXIMUM POWER IN SELECTED GEARS											
90.78 (67.69)	11910 (52.90)	2.86 (4.60)	2126	14.83	4th (2-1) Gear			189 (87.2)	68 (20.0)	70 (21.1)	29.00 (97.93)
98.04 (73.11)	8970 (39.94)	4.09 (6.59)	2101	7.18	5th (2-2) Gear			191 (88.3)	70 (21.1)	74 (23.3)	28.91 (97.62)
99.08 (73.88)	7973 (35.47)	4.66 (7.50)	2101	5.98	6th (3-1) Gear			192 (88.6)	70 (21.1)	74 (23.3)	28.91 (97.62)
98.50 (73.45)	7068 (31.44)	5.23 (8.41)	2101	5.33	7th (2-3) Gear			192 (88.9)	70 (21.1)	75 (23.9)	28.91 (97.62)
100.12 (74.66)	5924 (26.35)	6.34 (10.20)	2100	4.54	8th (3-2) Gear			192 (88.9)	70 (21.1)	75 (23.9)	28.90 (97.59)
98.64 (73.55)	4619 (20.54)	8.01 (12.89)	2099	3.25	9th (3-3) Gear			193 (89.2)	70 (21.1)	75 (23.9)	28.90 (97.59)

LUGGING ABILITY IN 8th (3-2) GEAR

Crankshaft Speed rpm	2100	1892	1683	1472	1255	1055
Pull—lbs (kN)	5924 (26.35)	6436 (28.83)	6756 (30.38)	6827 (30.60)	6609 (29.90)	6349 (28.46)
Increase in Pull %	0	9	14	15	13	7
Power—Hp (kW)	103.12 (74.66)	97.50 (72.71)	90.84 (67.74)	80.18 (59.79)	67.10 (50.05)	53.52 (39.91)
Speed—Mph (km/h)	6.34 (10.20)	5.68 (9.14)	5.04 (8.12)	4.40 (7.09)	3.76 (6.05)	3.16 (5.09)
Slip %	4.54	4.80	4.95	5.10	4.95	4.80

Department of Agricultural Engineering

Dates of Test: May 30 to June 16, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8408 **Fuel weight** 7.000 lbs/gal *(0.839 kg/l)* **Oil SAE** 30 **API service classification** SF, CD **To motor** 4.354 gal *(16.481 l)* **Drained from motor** 4.085 gal *(15.463 l)* **Transmission and final drive lubricant** Case Powergard PTF transmission fluid **Total time engine was operated** 40.0 hours.

ENGINE: Make Case Diesel **Type** six cylinder vertical **Serial No.** *10356640* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" × 5.0" *(117.5 mm × 127 mm)* **Compression ratio** 16.0 to 1 **Displacement** 504 cu in *(8259 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** *9952956* **Tread width** rear 60" *(1524 mm)* to 124" *(3150 mm)* front 60" *(1524 mm)* to 88" *(2235 mm)* **Wheel base** 110" *(2794 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 25.7" *(652 mm)* Vertical distance above roadway 40.7" *(1034 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.9 *(3.1)* second 2.5 *(4.0)* third 3.2 *(5.2)* fourth 3.2 *(5.2)* fifth 4.5 *(6.9)* sixth 4.9 *(7.9)* seventh 5.4 *(8.7)* eighth 6.5 *(10.5)* ninth 8.1 *(13.0)* tenth 9.9 *(15.9)* eleventh 13.2 *(21.2)* twelfth 18.1 *(29.1)* reverse 3.2 *(5.2)*, 5.4 *(8.7)*, 8.1 *(13.0)* **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161.8" *(4.11 m)* left 161.8" *(4.11 m)* (on concrete surface without brake) right 182.2" *(4.63 m)* left 182.2" *(4.63 m)* **Turning space diameter** (on concrete surface with brake applied) right 338" *(8.59 m)* left 338" *(8.59 m)* (on concrete surface without brake) right 382.2" *(9.71 m)* left 382.2" *(9.71 m)* **Power take-off** 534 rpm at 2100 engine rpm and 998 rpm at 2100 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	77.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	77.5
50% of Pull at Reduced Engine Speed—Two Hours	74.5
Bystander in 12th (4-3) gear	88.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Inner Two 18.4-38; 8; 14 (95) Outer Two 18.4-38; 6; 14 (95)	Inner Two 18.4-38; 8; 14 (95) Outer Two 18.4-38; 6; 14 (95)
Ballast	—Liquid (each)	None	None
	—Cast Equip (each)	78 lb (35 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.00-16; 8; 40 (275)	Two 11.00-16; 8; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	125 lb (57 kg)	None
Height of Drawbar		19.5 in (495 mm)	19.5 in (495 mm)
Static Weight with Operator	—Rear	11230 lb (5094 kg)	10920 lb (4953 kg)
	—Front	5520 lb (1597 kg)	5270 lb (1681 kg)
	—Total	14750 lb (6691 kg)	14190 lb (6436 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 180°F *(82.2°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1525**, July 19, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Case 2094 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1526 — CASE 2294 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (L/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Fuel Consumption Hp-hr/gal (kW-h/L)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—998 rpm)								
191.97 (98.61)	2100	8.679 (33.609)	0.471 (0.287)	14.86 (2.928)	190 (88.0)	67 (19.6)	76 (24.7)	28.36 (96.04)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
115.46 (86.10)	2102	8.167 (30.916)	0.495 (0.301)	14.14 (2.795)	186 (85.6)	67 (19.2)	77 (25.0)	....
0.00 (0.00)	2107	2.815 (10.657)	....	....	173 (78.1)	68 (20.0)	77 (25.0)	....
99.75 (74.36)	2238	5.335 (20.194)	0.623 (0.380)	11.99 (2.206)	192 (89.1)	68 (19.7)	77 (25.0)	....
131.36 (98.10)	2100	8.857 (33.528)	0.471 (0.287)	14.83 (2.926)	191 (88.1)	67 (19.6)	77 (25.0)	....
30.24 (22.55)	2206	4.049 (15.328)	0.937 (0.570)	7.47 (1.471)	176 (80.0)	67 (19.4)	77 (25.0)	....
88.26 (65.82)	2204	6.702 (25.596)	0.536 (0.326)	13.05 (2.571)	186 (85.5)	68 (19.7)	78 (25.6)	....
Av 79.00 Δx ± (58.84)	2213	5.995 (32.703)	0.592 (0.360)	11.82 (3.520)	182 (83.3)	67 (19.6)	77 (25.1)	28.33 (96.34)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (L/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (3-2) Gear											
115.55 (86.01)	6877 (30.59)	6.29 (10.12)	2089	5.11	8.799 (33.307)	0.534 (0.325)	13.11 (2.582)	195 (89.2)	66 (18.9)	69 (20.5)	28.64 (96.71)
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
92.29 (68.82)	5191 (23.09)	6.67 (10.73)	2189	3.51	7.550 (28.614)	0.575 (0.349)	12.21 (2.405)	191 (88.4)	65 (17.3)	78 (25.6)	28.71 (97.09)
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
65.29 (47.20)	5461 (15.00)	6.46 (1.04)	2224	2.34	6.021 (22.799)	0.666 (0.405)	10.31 (2.071)	191 (88.3)	75 (23.9)	87 (30.6)	28.52 (95.62)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
63.90 (47.20)	5481 (15.00)	6.86 (11.04)	1957	2.34	4.526 (17.039)	0.498 (0.303)	14.05 (2.767)	194 (90.0)	72 (22.2)	92 (33.3)	28.28 (95.62)
MAXIMUM POWER IN SELECTED GEARS											
100.47 (74.92)	13917 (57.90)	2.89 (4.66)	2135	14.81	4th (2-1) Gear			190 (87.8)	66 (20.0)	71 (21.7)	28.46 (96.31)
113.19 (84.41)	10484 (46.63)	4.05 (6.52)	2100	8.50	5th (2-2) Gear			193 (89.4)	69 (20.6)	72 (22.2)	28.46 (96.31)
114.48 (85.37)	9285 (41.29)	4.62 (7.44)	2100	6.94	6th (3-1) Gear			194 (89.7)	70 (21.1)	73 (22.8)	28.45 (96.07)
115.37 (86.03)	8342 (37.11)	5.10 (8.35)	2100	6.15	7th (3-2) Gear			194 (89.7)	70 (21.1)	74 (23.3)	28.44 (96.04)
110.50 (80.78)	6921 (30.78)	6.51 (10.13)	2100	4.92	8th (3-2) Gear			195 (90.3)	71 (21.7)	77 (25.0)	28.41 (95.94)
115.41 (86.06)	5435 (24.17)	7.96 (12.82)	2099	3.77	9th (3-3) Gear			194 (90.0)	71 (21.7)	75 (23.9)	28.43 (96.00)
112.94 (84.22)	4515 (19.19)	9.02 (15.89)	2100	2.98	10th (4-1) Gear			192 (88.9)	71 (21.7)	76 (24.4)	28.42 (95.97)

LUGGING ABILITY IN 8th (3-2) GEAR

Crankshaft Speed rpm	2100	1802	1877	1470	1264	1049
Pull—lbs (kN)	6921 (30.78)	7376 (33.96)	8079 (36.21)	8401 (37.65)	8414 (37.71)	8045 (36.06)
Increase in Pull %	0	9	17	21	22	16
Power—Hp (kW)	116.58 (86.70)	114.10 (85.09)	107.35 (80.05)	97.60 (72.78)	83.87 (62.54)	66.76 (49.78)
Speed—Mph (km/h)	6.51 (10.13)	5.60 (9.09)	4.98 (8.02)	4.55 (7.01)	3.74 (6.02)	3.11 (5.01)
Slip %	4.92	5.45	5.75	6.80	6.55	5.00

Department of Agricultural Engineering

Dates of Test: June 1-12, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8408 **Fuel weight** 7.001 lbs/gal *(0.839 kg/l)* **Oil SAE** 30 **API service classification** SF, CD **To motor** 5.201 gal *(19.687 l)* **Drained from motor** 4.933 gal *(18.674 l)* **Transmission and final drive lubricant** Case Powergard PTF transmission fluid **Total time engine was operated** 39.0 hours.

ENGINE: Make Case Diesel **Type** six cylinder vertical with turbocharger **Serial No.** *°10356589° **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" × 5.0" *(117.5 mm × 127 mm)* **Compression ratio** 15.8 to 1 **Displacement** 504 cu in *(8259 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** *9935294?* **Tread width** rear 60" *(1524 mm)* to 124" *(3150 mm)* front 60" *(1524 mm)* to 88" *(2235 mm)* **Wheel base** 110" *(2794 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 25.8" *(655 mm)* Vertical distance above roadway 40.6" *(1031 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.0 *(3.1)* second 2.5 *(4.0)* third 3.2 *(5.2)* fourth 3.2 *(5.2)* fifth 4.3 *(6.9)* sixth 4.9 *(7.9)* seventh 5.4 *(8.7)* eighth 6.5 *(10.5)* ninth 8.1 *(13.0)* tenth 9.0 *(13.9)* eleventh 13.2 *(21.2)* twelfth 18.1 *(29.1)* reverse 3.2 *(5.2)*, 5.4 *(8.7)*, 8.1 *(13.0)* **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 162" *(4.12 m)* left 162" *(4.12 m)* (on concrete surface without brake) right 182" *(4.62 m)* left 182" *(4.62 m)* **Turning space diameter** (on concrete surface with brake applied) right 338" *(8.59 m)* left 338" *(8.59 m)* (on concrete surface without brake) right 382" *(9.70 m)* left 382" *(9.70 m)* **Power take-off** 554 rpm at 2100 engine rpm and 998 rpm at 2100 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	76.0
75% of Pull at Maximum Power—Ten Hours	76.5
50% of Pull at Maximum Power—Two Hours	76.5
50% of Pull at Reduced Engine Speed—Two Hours	75.5
Bystander in 12th (5-4) gear	84.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 18.4-38, 6, 14 *(95)*	Four 18.4-38, 6, 14 *(95)*
Ballast	—Liquid (each inner)	507 lb *(257 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.00-16, 8, 40 *(275)*	Two 11.00-16, 8, 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	100 lb *(45 kg)*	None
Height of Drawbar		19.5 in *(495 mm)*	19.5 in *(495 mm)*
Static Weight with Operator	—Rear	12100 lb *(5489 kg)*	11055 lb *(5014 kg)*
	—Front	3070 lb *(1619 kg)*	3335 lb *(1515 kg)*
	—Total	15070 lb *(7108 kg)*	14390 lb *(6527 kg)*

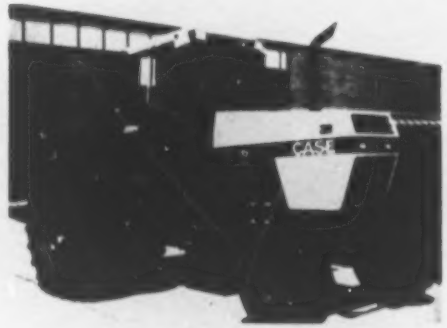
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 192°F *(89.0°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During drawbar tests, the engine oil pressure warning light and beeper were activated intermittently.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1526**, July 10, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Case 2294 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1527—CASE 2394 POWERSHIFT DIESEL 24 SPEED ALSO 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperatures °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1002 rpm)								
102.15 (138.91)	2100	10.486 (39.691)	0.453 (0.277)	15.46 (5.046)	188 (86.4)	69 (20.5)	76 (24.2)	28.90 (97.59)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
141.36 (105.34)	2152	9.424 (35.674)	0.467 (0.284)	14.99 (2.953)	184 (84.2)	70 (21.1)	77 (24.7)	....
0.00 (0.00)	2327	2.853 (10.725)	....	....	171 (77.2)	70 (21.1)	76 (24.4)	....
75.08 (54.94)	2345	6.141 (23.247)	0.585 (0.355)	12.09 (2.363)	177 (80.6)	71 (21.4)	77 (24.7)	....
150.46 (110.91)	2100	10.401 (39.373)	0.457 (0.278)	15.55 (3.030)	188 (86.4)	71 (21.7)	79 (25.8)	....
37.44 (27.92)	2283	4.363 (16.515)	0.816 (0.496)	8.58 (1.691)	174 (78.9)	71 (21.7)	79 (26.1)	....
108.02 (80.53)	2194	7.757 (29.363)	0.505 (0.306)	13.92 (2.743)	182 (83.1)	72 (22.2)	80 (26.7)	....
Av 86.04 (64.44)	2217	6.859 (25.816)	0.581 (0.353)	12.79 (2.540)	179 (81.7)	71 (21.5)	79 (25.4)	28.88 (97.52)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (3-4) Gear											
137.78 (102.74)	8548 (38.02)	6.04 (9.73)	2100	4.81	10.264 (38.855)	0.321 (0.317)	13.42 (2.644)	194 (90.0)	75 (23.6)	84 (28.9)	28.83 (97.54)
75% of Pull at Maximum Power—Ten Hours 10th (3-4) Gear											
110.95 (82.72)	6575 (29.24)	6.53 (10.18)	2170	3.51	8.724 (33.025)	0.551 (0.335)	12.71 (2.505)	186 (85.8)	71 (21.6)	74 (23.1)	28.98 (97.85)
50% of Pull at Maximum Power—Two Hours 10th (3-4) Gear											
70.65 (57.15)	4382 (19.49)	6.56 (10.55)	2222	2.34	6.945 (26.282)	0.634 (0.386)	11.04 (2.174)	186 (85.6)	77 (24.7)	84 (28.6)	29.00 (97.93)
30% of Pull at Reduced Engine Speed—Two Hours 10th (3-4) Gear											
76.86 (57.16)	4382 (19.49)	6.56 (10.56)	1777	2.34	5.857 (22.172)	0.555 (0.325)	15.09 (2.570)	187 (86.1)	77 (25.0)	89 (31.4)	28.98 (97.84)
MAXIMUM POWER IN SELECTED GEARS											
124.29 (92.68)	13497 (62.95)	3.01 (4.84)	2112	14.77	8th (2-2) Gear			190 (87.8)	72 (22.2)	77 (25.0)	28.82 (97.52)
133.86 (101.16)	13706 (61.36)	3.09 (5.00)	2100	9.16	9th (2-3) Gear			189 (87.2)	71 (21.7)	74 (23.5)	29.05 (98.03)
134.95 (100.62)	13460 (59.87)	3.76 (6.05)	2100	9.01	10th (3-1) Gear			189 (87.2)	71 (21.7)	75 (23.9)	29.05 (98.03)
138.25 (103.09)	11985 (53.18)	4.34 (6.98)	2100	7.39	11th (2-4) Gear			192 (88.6)	76 (24.4)	82 (27.8)	29.00 (97.95)
138.53 (103.30)	11736 (52.29)	4.42 (7.11)	2100	7.17	12th (3-2) Gear			193 (89.4)	76 (24.4)	82 (27.8)	29.00 (97.93)
139.25 (103.82)	10988 (48.92)	4.73 (7.64)	2101	6.41	13th (2-5) Gear			193 (89.2)	75 (23.9)	81 (27.2)	29.01 (97.96)
140.21 (104.56)	10133 (45.03)	5.19 (8.35)	2101	5.71	14th (3-3) Gear			193 (89.4)	75 (23.9)	81 (27.2)	29.01 (97.96)
142.07 (105.95)	9632 (42.84)	5.53 (8.90)	2101	5.40	15th (2-6) Gear			193 (89.4)	73 (22.8)	77 (25.0)	29.02 (98.00)
141.04 (105.18)	8764 (38.98)	6.04 (9.71)	2099	4.77	16th (3-4) Gear			193 (89.2)	73 (22.8)	77 (25.0)	29.01 (97.96)
140.53 (104.79)	8010 (35.63)	6.56 (10.59)	2101	4.30	17th (3-5) Gear			193 (89.2)	74 (23.3)	78 (25.6)	29.01 (97.96)
139.89 (104.17)	6855 (30.49)	7.64 (12.30)	2100	3.73	18th (3-6) Gear			192 (88.9)	74 (23.3)	79 (26.1)	29.01 (97.96)
137.37 (102.44)	5424 (24.13)	9.50 (15.28)	2099	2.85	19th (4-1) Gear			190 (87.8)	75 (23.9)	80 (26.7)	29.01 (97.96)

Department of Agricultural Engineering

Dates of Test: June 7-23, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8408 **Fuel weight** 7.000 lbs/gal *(0.839 kg/l)* **Oil SAE 30 API service classification** SF, CD **To motor** 6.845 gal *(25.902 l)* **Drained from motor** 6.348 gal *(24.030 l)* **Transmission and final drive lubricant** Case Powergard FTF transmission fluid **Total time engine was operated** 54.0 hours.

ENGINE: Make Case Diesel **Type** six cylinder vertical with turbocharger **Serial No.** *"10357180" **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" *(117.5 mm x 127 mm)* **Compression ratio** 15.8 to 1 **Displacement** 504 cu in *(8259 ml)* **Starting system** 12 volt **Lubrication pressure Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** *"9935245" **Tread width** rear 64" *(1626 mm)* to 134" *(3404 mm)* front 61" *(1549 mm)* to 89" *(2261 mm)* **Wheel base** 118" *(2997 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.5" *(700 mm)* Vertical distance above roadway 40.7" *(1034 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.7 *(2.8)* second 2.0 *(3.2)* third 2.5 *(3.8)* fourth 2.7 *(4.3)* fifth 2.9 *(4.7)* sixth 3.0 *(4.8)* seventh 3.4 *(5.4)* eighth 3.5 *(5.6)* ninth 4.0 *(6.5)* tenth 4.1 *(6.6)* eleventh 4.6 *(7.4)* twelfth 4.7 *(7.6)* thirteenth 5.0 *(8.1)* fourteenth 5.5 *(8.8)* fifteenth 5.8 *(9.3)* sixteenth 6.3 *(10.1)* seventeenth 6.8 *(11.0)* eighteenth 7.9 *(12.0)* nineteenth 9.7 *(15.6)* twentieth 11.2 *(18.0)* twenty-first 12.9 *(20.8)* twenty-second 14.9 *(23.9)* twenty-third 16.1 *(25.9)* twenty-fourth 20.1 *(32.4)* reverse 2.9 *(4.7)*, 5.0 *(8.1)*, 6.8 *(11.0)* **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 163.8" *(4.16 m)* left 163.8" *(4.16 m)* (on concrete surface without brake) right 184.5" *(4.69 m)* left 184.5" *(4.69 m)* **Turning space diameter** (on concrete surface with brake applied) right 342.0" *(8.69 m)* left 342.0" *(8.69 m)* (on concrete surface without brake) right 388.8" *(9.88 m)* left 388.8" *(9.88 m)* **Power take-off** 1002 rpm at 2100 engine rpm.

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (3-4) Gear											
139.80 (104.23)	8138 (36.20)	6.44 (10.37)	2100	2.26	10.279 (38.909)	0.515 (0.313)	15.60 (2.679)	196 (90.8)	74 (23.3)	89 (31.4)	29.80 (97.25)
MAXIMUM POWER IN SELECTED GEARS											
121.97 (90.95)	16799 (74.72)	2.72 (4.38)	2119	14.54	6th (1-1) Gear			185 (85.0)	71 (21.7)	75 (23.3)	28.80 (97.25)
137.77 (102.73)	15907 (70.76)	3.25 (5.23)	2100	7.82	7th (1-6) Gear			188 (86.4)	71 (21.7)	76 (24.4)	28.81 (97.29)
139.93 (104.33)	13482 (60.87)	3.39 (5.45)	2100	7.04	8th (2-2) Gear			188 (86.4)	71 (21.7)	77 (25.0)	28.82 (97.33)
142.25 (106.06)	13267 (59.01)	4.02 (6.47)	2101	4.63	9th (2-3) Gear			188 (86.4)	71 (21.7)	78 (25.6)	28.82 (97.32)
142.48 (106.23)	13056 (58.08)	4.09 (6.58)	2099	4.54	10th (3-1) Gear			190 (87.3)	71 (21.7)	79 (26.1)	28.82 (97.32)
143.48 (106.99)	11489 (51.11)	4.68 (7.54)	2101	3.63	11th (2-4) Gear			192 (88.9)	71 (21.7)	80 (26.7)	28.82 (97.32)
142.82 (106.50)	11222 (49.92)	4.77 (7.68)	2100	3.54	12th (3-2) Gear			192 (88.6)	71 (21.7)	80 (26.7)	28.82 (97.32)
145.01 (108.13)	10668 (47.45)	5.10 (8.20)	2099	3.29	13th (2-5) Gear			191 (88.3)	71 (21.7)	81 (27.2)	28.82 (97.32)
143.60 (107.08)	9694 (43.12)	5.55 (8.94)	2100	2.86	14th (3-3) Gear			194 (89.7)	72 (22.2)	82 (27.8)	28.81 (97.29)
143.47 (106.98)	9088 (40.42)	5.92 (9.53)	2099	2.69	15th (2-6) Gear			195 (89.4)	72 (22.2)	83 (28.3)	28.81 (97.29)
143.44 (106.97)	8557 (37.17)	6.44 (10.36)	2099	2.34	16th (3-4) Gear			193 (89.4)	72 (22.2)	83 (28.3)	28.81 (97.29)
142.25 (106.07)	7624 (33.91)	7.00 (11.26)	2100	2.08	17th (3-5) Gear			193 (89.4)	72 (22.2)	84 (28.9)	28.81 (97.29)
139.95 (104.36)	6482 (28.83)	8.10 (13.03)	2099	1.82	18th (3-6) Gear			194 (89.7)	72 (22.2)	84 (28.9)	28.81 (97.29)

TIRES, BALLAST AND WEIGHT		Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast	Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 14 (95)	Four 20.8-38; 8; 14 (95)	Four 20.8R38; 8; 14 (95)	Four 20.8R38; 8; 14 (95)
Ballast	—Liquid (each tester)	1060 lb (484 kg)	None	980 lb (445 kg)	None
	—Cast Iron (each)	None	None	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	110 lb (50 kg)	None	120 lb (54 kg)	None
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)	21.5 in (545 mm)	21.5 in (545 mm)
Static Weight with Operator	—Rear	14025 lb (6634 kg)	12490 lb (5665 kg)	14610 lb (6627 kg)	13050 lb (5738 kg)
	—Front	3970 lb (1801 kg)	3750 lb (1701 kg)	3990 lb (1810 kg)	3750 lb (1701 kg)
	—Total	18595 lb (8435 kg)	16240 lb (7366 kg)	18600 lb (8437 kg)	16400 lb (7439 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 179°F *(81.7°C)*. Twelve gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1527**, July 19, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON SARGEN
W. E. SPANTER
L. L. BASHFORD
Board of Tractor Test Engineers

Case 2394 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

LUGGING ABILITY IN 16th (5-4) GEAR

Crankshaft Speed rpm	2099	1892	1677	1430	1282	1054
Pull—lbs (kN)	8764 (38.98)	9947 (44.30)	10572 (46.99)	10618 (47.59)	10304 (46.18)	9314 (41.75)
Increase in Pull %	0	13	18	21	18	6
Power—Hp (kW)	141.04 (105.18)	143.08 (106.70)	131.76 (98.29)	117.11 (87.33)	98.46 (73.42)	74.92 (55.79)
Speed—Mph (km/h)	5.04 (8.11)	5.39 (8.68)	4.76 (7.67)	4.14 (6.66)	3.58 (5.77)	3.01 (4.85)
Slip %	4.77	3.71	3.87	6.18	6.02	5.56

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	76.0	76.0
75% of Pull at Maximum Power—Ten Hours		75.5
50% of Pull at Maximum Power—Two Hours		76.0
50% of Pull at Reduced Engine Speed—Two Hours		74.0
Bystander in 23rd (4-5) gear		88.0

NEBRASKA TRACTOR TEST 1529—CASE 2594 POWERSHIFT DIESEL 24 SPEED ALSO 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (L)	Fuel Consumption lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temperature °F (°C) Cooling water	Temperature °F (°C) Air into bath	Temperature °F (°C) Air dry bath	Barrow tooth Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
182.07 (135.77)	2100	11.902 (45.176)	0.650 (0.388)	15.77 (2.998)	190 (88.7)	68 (17.3)	75 (23.8)	28.67 (96.83)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
160.09 (119.38)	2151	10.704 (40.519)	0.656 (0.398)	14.96 (3.944)	189 (86.9)	65 (17.2)	73 (22.8)	....
0.00 (0.00)	2100	3.055 (11.565)	....	....	175 (78.1)	65 (18.9)	73 (23.8)	....
82.32 (61.83)	2250	6.642 (25.142)	0.561 (0.341)	12.48 (3.459)	179 (81.9)	68 (16.7)	74 (23.3)	....
183.49 (136.82)	2100	11.994 (45.401)	0.654 (0.398)	15.30 (3.814)	189 (86.9)	68 (16.9)	76 (24.2)	....
42.94 (31.35)	2281	4.205 (18.204)	0.804 (0.489)	8.71 (1.701)	174 (78.9)	68 (17.2)	74 (23.3)	....
122.41 (91.28)	2213	8.056 (30.765)	0.495 (0.301)	14.14 (2.766)	183 (83.8)	69 (17.2)	75 (23.8)	....
Av 90.49 (73.94)	2223	7.048 (26.943)	0.844 (0.533)	12.88 (2.530)	183 (83.1)	68 (17.6)	75 (23.8)	29.88 (98.94)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank shaft speed rpm	Slip %	Fuel Consumption gal/hr (L/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temp. °F (°C) Cool. wtr meas	Temp. °F (°C) Air wtr bath	Temp. °F (°C) Air dry bath	Barrow tooth Hg (kPa)
Maximum Available Power—Two Hours 10th (5-4) Gear											
159.04 (119.04)	9365 (41.57)	6.41 (10.31)	2080	5.83	11.941 (45.202)	0.524 (0.319)	13.57 (2.634)	190 (92.8)	68 (20.0)	75 (23.6)	28.58 (96.51)
75% of Pull at Maximum Power—Two Hours 10th (5-4) Gear											
128.78 (96.03)	7115 (31.65)	6.79 (10.92)	2180	4.16	9.950 (37.663)	0.541 (0.329)	12.94 (2.330)	185 (89.6)	72 (22.1)	81 (26.9)	29.52 (99.29)
50% of Pull at Maximum Power—Two Hours 10th (5-4) Gear											
89.08 (66.40)	4744 (21.10)	7.04 (11.33)	2235	2.70	7.656 (28.981)	0.602 (0.366)	11.65 (2.291)	187 (85.8)	69 (20.6)	78 (25.6)	29.54 (99.36)
32% of Pull at Reduced Engine Speed—Two Hours 10th (5-4) Gear											
80.09 (66.59)	4745 (21.10)	7.04 (11.33)	1700	2.66	6.585 (24.926)	0.510 (0.311)	13.92 (2.664)	188 (86.4)	69 (20.6)	82 (27.3)	29.55 (99.39)

MAXIMUM POWER IN SELECTED GEARS

140.87 (105.70)	16874 (75.06)	3.24 (5.22)	2131	14.97	8th (2-2) Gear	191 (88.3)	66 (18.9)	72 (22.2)	28.69 (96.31)
152.62 (113.81)	14805 (66.08)	3.93 (6.32)	2100	11.93	9th (2-3) Gear	190 (91.1)	68 (18.9)	73 (21.7)	28.64 (96.71)
153.03 (114.73)	14694 (65.36)	3.93 (6.32)	2080	11.80	10th (3-1) Gear	190 (91.1)	66 (18.9)	73 (21.7)	28.65 (96.68)
150.56 (112.80)	13983 (62.20)	4.57 (7.33)	2090	9.90	11th (2-4) Gear	194 (90.0)	66 (18.9)	73 (21.7)	28.65 (96.68)
150.75 (112.12)	13955 (57.17)	4.66 (7.50)	2100	8.56	12th (3-2) Gear	196 (90.8)	66 (18.3)	73 (21.7)	28.62 (96.65)
150.66 (112.32)	11982 (52.76)	5.02 (8.07)	2101	7.74	13th (2-5) Gear	195 (90.3)	65 (18.3)	73 (21.7)	28.62 (96.65)
150.04 (112.44)	10866 (48.33)	5.48 (8.82)	2080	6.91	14th (3-3) Gear	195 (90.6)	65 (18.3)	73 (21.7)	28.61 (96.61)
150.19 (119.46)	10250 (45.63)	5.86 (9.42)	2080	6.53	15th (3-4) Gear	194 (90.0)	65 (18.3)	73 (21.7)	28.61 (96.61)
161.96 (120.77)	9487 (42.20)	6.40 (10.30)	2100	5.91	16th (3-4) Gear	197 (91.6)	67 (19.0)	73 (22.8)	28.60 (96.58)
150.86 (119.21)	8696 (38.24)	6.97 (11.22)	2090	5.39	17th (3-5) Gear	196 (90.8)	65 (18.3)	70 (21.1)	28.60 (96.58)
150.69 (119.29)	7990 (32.87)	8.11 (13.06)	2100	4.57	18th (3-6) Gear	198 (90.6)	66 (18.9)	71 (21.7)	28.60 (96.58)

Department of Agricultural Engineering

Dates of Test: May 31 to June 20, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity** converted to 60°/60° (15°/15°) 0.8400 **Fuel weight** 7.001 lbs/gal (0.839 kg/l) **Oil** SAE 30 **API service classification** SF, CD **To motor** 7.318 gal (27.701 l) **Drained from motor** 6.670 gal (25.249 l) **Transmission and final drive lubricant** Case Powerguard PTF transmission fluid **Total time engine was operated** 48.0 hours.

ENGINE: **Make** Case Diesel **Type** six cylinder vertical with turbocharger **Serial No.** "10356086" **Crankshaft lengthwise** **Rated rpm** 2100 **Bore and stroke** 4.025" x 5.00" (117.5 mm x 127 mm) **Compression ratio** 15.8 to 1 **Displacement** 504 cu in (8259 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** standard with duals **Serial No.** "JJG322894" **Tread width** rear 64" (1626 mm) to 134" (3404 mm) front 61" (1549 mm) to 89" (2261 mm) **Wheel base** 118" (2997 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.8" (700 mm) Vertical distance above roadway 39.8" (1011 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.9 (3.0) second 2.1 (3.4) third 2.5 (4.0) fourth 2.9 (4.6) fifth 3.1 (5.0) sixth 3.2 (5.2) seventh 3.6 (5.8) eighth 3.7 (6.0) ninth 4.5 (6.9) tenth 4.4 (7.0) eleventh 4.9 (7.9) twelfth 5.0 (8.1) thirteenth 5.4 (8.6) fourteenth 5.8 (9.4) fifteenth 6.2 (9.9) nineteenth 6.7 (10.8) seventeenth 7.3 (11.7) eighteenth 8.4 (13.5) nineteenth 10.4 (16.7) twentieth 11.9 (19.1) twenty-first 13.8 (22.2) twenty-second 15.9 (25.5) twenty-third 17.2 (27.7) twenty-fourth 20.8 (33.5) reverse 3.1 (5.0), 5.4 (8.6), 7.3 (11.7) **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 165.8" (4.16 m) left 163.8" (4.16 m) (on concrete surface without brake) right 184.5" (4.69 m) left 184.5" (4.69 m) **Turning space diameter** (on concrete surface with brake applied) right 342" (8.69 m) left 342" (8.69 m) (on concrete surface without brake) right 388.8" (9.88 m) left 388.8" (9.88 m) **Power take-off** 1002 rpm at 2100 engine rpm.

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank shaft speed rpm	Slip %	Fuel Consumption gal/hr (L/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temp. °F (°C) Cool. wtr meas	Temp. °F (°C) Air wtr bath	Temp. °F (°C) Air dry bath	Barrow tooth Hg (kPa)
Maximum Available Power—Two Hours 10th (5-4) Gear											
161.02 (120.74)	8965 (39.54)	6.86 (11.05)	2101	2.98	11.771 (44.560)	0.509 (0.310)	13.76 (2.710)	201 (93.6)	69 (20.6)	82 (27.8)	29.99 (97.88)
MAXIMUM POWER IN SELECTED GEARS											
141.36 (105.48)	17790 (78.86)	2.90 (4.65)	2148	15.03	6th (2-1) Gear	190 (86.7)	66 (18.3)	70 (21.1)	28.92 (97.66)
157.04 (117.10)	17197 (76.49)	3.42 (5.51)	2108	9.06	7th (1-0) Gear	195 (88.6)	66 (18.9)	72 (22.2)	28.90 (97.69)
160.90 (120.05)	16918 (75.26)	3.57 (5.74)	2100	8.43	8th (2-2) Gear	198 (89.8)	66 (18.9)	73 (22.8)	28.93 (97.69)
162.60 (121.32)	14986 (65.46)	4.09 (6.60)	2100	6.97	9th (2-3) Gear	198 (90.3)	67 (19.4)	74 (23.3)	28.94 (97.73)
160.17 (121.68)	14681 (62.30)	4.36 (7.01)	2080	6.80	10th (3-1) Gear	194 (90.0)	67 (19.4)	74 (23.3)	28.95 (97.76)
167.36 (124.80)	13990 (58.08)	4.68 (8.03)	2100	6.15	11th (2-4) Gear	196 (90.6)	67 (19.4)	75 (23.9)	28.95 (97.76)
167.28 (124.74)	13702 (54.96)	5.08 (8.17)	2101	5.90	12th (3-2) Gear	197 (91.4)	67 (19.4)	75 (23.9)	28.96 (97.79)
164.75 (122.88)	11578 (50.61)	5.45 (8.76)	2089	5.36	13th (2-5) Gear	197 (91.7)	67 (19.4)	76 (24.4)	28.96 (97.79)
160.21 (125.20)	10479 (46.58)	5.92 (9.52)	2100	5.13	14th (3-3) Gear	197 (91.7)	67 (19.4)	76 (24.4)	28.97 (97.83)
160.41 (124.09)	9894 (44.01)	6.31 (10.15)	2101	2.80	15th (3-4) Gear	198 (91.9)	68 (20.0)	78 (25.6)	28.97 (97.83)
160.02 (124.39)	9119 (40.56)	6.80 (11.04)	2100	2.70	16th (3-4) Gear	198 (92.2)	68 (20.0)	78 (25.6)	28.99 (97.89)
165.52 (121.94)	8230 (36.60)	7.45 (11.99)	2089	2.45	17th (3-5) Gear	198 (92.2)	69 (20.6)	79 (26.1)	28.98 (97.86)
165.04 (120.88)	7115 (31.64)	8.69 (13.98)	2100	2.01	18th (3-6) Gear	198 (92.2)	70 (21.1)	80 (26.7)	28.97 (97.83)

TIRES, BALLAST AND WEIGHT		Bias Ply Tires: With Ballast	Bias Ply Tires: Without Ballast	Radial Ply Tires: With Ballast	Radial Ply Tires: Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 14 (95)	Four 20.8-38; 8; 14 (95)	Four 20.8R38; 8; 14 (95)	Four 20.8R38; 8; 14 (95)
Ballast	—Liquid (each tire)	1297 lb (589 kg)	None	1500 lb (620 kg)	None
	—Cast iron (each tire)	200 lb (91 kg)	None	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)	Two 14L-16.1; 10; 40 (275)
Ballast	—Liquid (each)	None	None	None	None
	—Cast iron (each)	300 lb (136 kg)	None	295 lb (133 kg)	None
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)	22.5 in (570 mm)	22.5 in (570 mm)
Basic Weight with Operator	—Rear	15465 lb (7015 kg)	12670 lb (5656 kg)	15300 lb (6981 kg)	12650 lb (5729 kg)
	—Front	4325 lb (1962 kg)	5750 lb (1701 kg)	4535 lb (1966 kg)	5750 lb (1701 kg)
	—Total	19790 lb (8977 kg)	18220 lb (7357 kg)	19725 lb (8947 kg)	16300 lb (7430 kg)

REPAIRS and ADJUSTMENTS: Before the second test, it was necessary to replace the hydraulic brake hose lines and install the missing clutch cable support bracket.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 100°F (85.6°C). Eleven gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1529, July 20, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Case 2594 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

LUGGING ABILITY IN 16th (3-4) GEAR

Crankshaft Speed rpm	2100	1892	1679	1476	1263	1051
Pull—lbs (kN)	9487 (42.20)	10380 (46.37)	11049 (49.52)	11127 (49.87)	10720 (48.03)	9392 (42.10)
Increase in Pull %	0	10	16	17	13	–1
Power—Hp (kW)	161.96 (120.77)	158.90 (118.49)	149.02 (111.13)	131.70 (98.21)	108.94 (81.24)	80.07 (59.70)
Speed—Mph (km/h)	6.40 (10.30)	5.74 (9.23)	5.06 (8.14)	4.44 (7.14)	3.81 (6.13)	3.20 (5.14)
Slip %	3.91	6.61	8.91	7.21	6.91	6.14

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	76.5	78.0
75% of Pull at Maximum Power—Ten Hours		76.5
50% of Pull at Maximum Power—Two Hours		76.5
50% of Pull at Reduced Engine Speed—Two Hours		74.0
Bystander in 25rd (4-5) gear		87.5

NEBRASKA TRACTOR TEST 1528 — CASE 3294 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
102.63 (121.27)	2100	10.614 (40.174)	0.457 (0.278)	15.32 (3.019)	186 (85.7)	69 (20.7)	75 (23.8)	29.02 (98.09)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
141.76 (105.71)	2154	9.537 (36.100)	0.471 (0.286)	14.86 (2.928)	182 (83.1)	70 (20.8)	76 (24.4)	....
0.00 (0.00)	2317	3.019 (11.427)	....	....	173 (78.1)	70 (20.8)	75 (23.9)	....
73.86 (55.08)	2245	6.119 (23.163)	0.580 (0.353)	12.07 (2.378)	179 (81.4)	69 (20.6)	75 (22.8)	....
102.99 (121.54)	2100	10.652 (40.320)	0.457 (0.278)	15.30 (3.014)	187 (85.8)	70 (20.8)	75 (23.9)	....
37.48 (27.95)	2280	4.554 (17.230)	0.850 (0.517)	8.23 (1.621)	175 (79.4)	70 (20.8)	76 (24.2)	....
108.76 (81.10)	2304	7.830 (29.640)	0.504 (0.306)	15.09 (2.716)	181 (82.8)	70 (21.1)	76 (24.4)	....
Av 87.40 Av (65.23)	2216	6.982 (26.315)	0.586 (0.350)	12.98 (2.479)	179 (81.8)	70 (20.8)	75 (23.9)	29.00 (97.94)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lb (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (2-3) Gear											
140.79 (104.99)	9185 (40.85)	5.75 (9.25)	2160	3.82	10.302 (39.337)	0.516 (0.314)	13.58 (2.669)	192 (88.9)	71 (21.7)	75 (23.9)	28.91 (97.94)
75% of Full at Maximum Power—Two Hours 7th (2-3) Gear											
113.36 (84.55)	7029 (31.27)	6.05 (9.73)	2182	2.60	8.882 (33.623)	0.548 (0.333)	12.76 (2.515)	189 (87.2)	73 (22.6)	77 (25.1)	28.95 (97.75)
50% of Full at Maximum Power—Two Hours 7th (2-3) Gear											
77.79 (58.01)	4667 (20.85)	6.22 (10.02)	2225	1.57	6.990 (26.459)	0.629 (0.382)	11.15 (2.197)	186 (86.7)	70 (20.8)	85 (29.2)	28.99 (97.88)
50% of Full at Reduced Engine Speed—Two Hours 9th (3-3) Gear											
77.92 (58.11)	4667 (20.85)	6.23 (10.03)	1494	1.02	5.456 (20.669)	0.495 (0.300)	14.18 (2.795)	189 (86.9)	72 (22.2)	87 (30.5)	28.97 (97.83)
MAXIMUM POWER IN SELECTED GEARS											
106.94 (79.74)	10242 (72.25)	2.47 (3.90)	2166	14.05	2nd (1-2) Gear			195 (89.9)	69 (20.6)	72 (22.2)	28.80 (97.56)
127.83 (95.32)	15090 (70.60)	3.02 (4.86)	2101	14.05	3rd (1-3) Gear			189 (87.2)	70 (21.1)	73 (22.8)	28.90 (97.89)
129.22 (96.36)	15585 (69.32)	3.11 (5.00)	2101	13.21	4th (2-1) Gear			189 (87.2)	65 (18.3)	75 (23.9)	29.00 (97.93)
141.22 (105.31)	11717 (52.12)	4.52 (7.27)	2100	5.51	5th (2-2) Gear			191 (88.1)	65 (18.3)	76 (24.4)	29.00 (97.93)
141.04 (105.17)	10349 (46.03)	5.14 (8.27)	2100	4.55	6th (3-1) Gear			192 (88.6)	65 (18.3)	76 (24.4)	29.00 (97.95)
143.68 (107.14)	9372 (41.69)	5.75 (9.25)	2100	3.86	7th (2-3) Gear			192 (88.9)	65 (18.9)	77 (25.0)	29.00 (97.93)
143.68 (106.98)	7727 (34.37)	6.96 (11.21)	2100	3.01	8th (3-2) Gear			192 (88.9)	66 (18.9)	78 (25.6)	29.00 (97.93)
141.08 (105.20)	6024 (26.80)	8.78 (14.13)	2102	2.32	9th (3-3) Gear			192 (88.9)	67 (19.4)	79 (26.1)	29.00 (97.93)

Department of Agricultural Engineering

Dates of Test: June 12-22, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8402 **Fuel weight** 6.996 lbs/gal *(0.838 kg/l)* **Oil** SAE 30 **API service classification** SF, CD **To motor** 5.515 gal *(20.870 l)* **Drained from motor** 5.076 gal *(19.214 l)* **Transmission and final drive lubricant** Case Powergard PTF transmission fluid **Front axle lubricant** SAE 90 EP **Total time engine was operated** 58.0 hours.

ENGINE: **Make** Case Diesel **Type** six cylinder vertical with turbocharger **Serial No.** *10556311* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" × 5.0" *(117.5 mm × 127 mm)* **Compression ratio** 15.8 to 1 **Displacement** 504 cu in *(8259 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges and prestrainer **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** all wheel drive with constant mesh front axle **Serial No.** *9955474* **Tread width** rear 64" *(1626 mm)* to 88" *(2235 mm)* front 75.4" *(1915 mm)* to 91.1" *(2314 mm)* **Wheel base** 104" *(2642 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 50.5" *(1278 mm)* Vertical distance above roadway 39.5" *(998 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.0 *(3.2)* second 2.6 *(4.2)* third 3.5 *(5.3)* fourth 3.4 *(5.5)* fifth 4.5 *(7.2)* sixth 5.0 *(8.0)* seventh 5.6 *(9.0)* eighth 6.7 *(10.8)* ninth 8.4 *(13.5)* tenth 10.2 *(16.4)* eleventh 13.6 *(21.9)* twelfth 18.8 *(30.3)* reverse 3.3 *(5.3)*, 5.6 *(9.0)*, 8.4 *(13.5)* **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** wet multiple disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 178" *(4.52 m)* left 178" *(4.52 m)* (on concrete surface without brake) right 242" *(6.15 m)* left 242" *(6.15 m)* **Turning space diameter** (on concrete surface with brake applied) right 387" *(9.82 m)* left 387" *(9.82 m)* (on concrete surface without brake) right 505" *(12.82 m)* left 505" *(12.82 m)* **Power take-off** 908 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (2-3) GEAR

Crankshaft Speed rpm	2100	1809	1602	1470	1257	1055
Pull—lbs (kN)	9372 (41.69)	10242 (45.91)	10757 (48.22)	11056 (49.56)	10807 (48.64)	10025 (44.93)
Increase in Pull %	0	9	15	18	15	7
Power—Hp (kW)	143.68 (107.14)	140.48 (104.76)	130.85 (97.57)	117.22 (87.41)	98.10 (73.16)	76.80 (57.27)
Speed—Mph (km/h)	5.75 (9.25)	5.14 (8.28)	4.56 (7.34)	3.98 (6.40)	3.40 (5.48)	2.87 (4.62)
Slip %	3.86	4.28	4.78	4.94	4.94	4.28

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	75.5
75% of Full at Maximum Power—Ten Hours	76.5
50% of Full at Maximum Power—Two Hours	76.0
50% of Full at Reduced Engine Speed—Two Hours	74.0
Bystander in 12th (4-3) gear	84.5

TIRES, BALLAST AND WEIGHT		As Tested	Pretest
Rear Tires	—No., size, ply & psi (kPa)	Two 20.8R38; 8; 16 (110)	Two 20.8R38; 8; 16 (110)
Ballast	-Liquid (inch)	None	None
	—Cast Equip. (inch)	140 lb (64 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 10; 28 (193)	Two 16.9-28; 10; 28 (193)
*Ballast	—Liquid (inch)	None	None
	—Cast Equip. (inch)	65 lb (29 kg)	None
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)
Static Weight with Operator—Rear		9680 lb (4391 kg)	9400 lb (4264 kg)
—Front		8300 lb (3765 kg)	8515 lb (3862 kg)
—Total		17980 lb (8156 kg)	17915 lb (8126 kg)

*Fluid was drained from front tires when test equipment was added to keep total weight below manufacturer's allowed gross vehicle weight of 18,000 lbs. *(8165 kg)*.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 171°F *(77.0°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

NOTE: This tractor is shipped from the factory with standard equipment consisting of: 3 point hitch Quick attaching coupler, front weight bracket, 12-100 lb *(45 kg)* front weights and fluid filled front tires. This weight with operator and full fuel tank is shown as the pretest weight.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1528, July 19, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Case 3294 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1530 — CASE 4994 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—691 rpm)								
344.04 (256.55)	2100	20.296 (76.681)	0.410 (0.249)	17.05 (3.354)	175 (79.2)	67 (19.4)	75 (24.0)	28.87 (97.68)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
308.00 (230.19)	2217	18.908 (71.571)	0.427 (0.260)	16.33 (3.216)	174 (78.6)	66 (18.9)	75 (23.8)	....
0.00 (0.00)	2541	5.222 (19.765)	....	....	170 (76.4)	66 (18.9)	74 (23.1)	....
150.04 (118.68)	2285	12.245 (46.352)	0.537 (0.327)	12.99 (2.599)	172 (77.5)	66 (18.9)	75 (23.9)	....
340.02 (258.47)	2100	20.213 (76.530)	0.407 (0.247)	17.15 (3.378)	174 (78.9)	66 (18.9)	73 (23.6)	....
80.72 (60.19)	2319	9.983 (37.788)	0.865 (0.525)	8.09 (1.595)	171 (77.2)	67 (19.4)	77 (25.0)	....
235.26 (175.43)	2254	15.295 (57.895)	0.453 (0.276)	15.38 (3.030)	173 (78.3)	66 (18.9)	74 (23.3)	....
Av 188.30 (140.48)	2283	13.844 (52.648)	0.505 (0.307)	13.81 (2.720)	172 (77.8)	66 (19.0)	75 (23.8)	28.87 (97.58)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th Gear											
304.84 (219.42)	18142 (80.70)	6.08 (9.79)	2100	3.86	20.057 (75.925)	0.475 (0.289)	14.67 (2.890)	181 (82.5)	65 (18.3)	78 (25.6)	29.00 (97.91)
75% of Full at Maximum Power—Ten Hours 6th Gear											
244.29 (182.17)	14037 (62.44)	6.53 (10.50)	2228	2.77	17.617 (66.680)	0.505 (0.306)	13.87 (2.732)	180 (82.3)	70 (21.3)	84 (29.1)	28.91 (97.62)
50% of Full at Maximum Power—Two Hours 6th Gear											
168.04 (125.31)	9339 (41.63)	6.73 (10.84)	2276	1.76	13.790 (52.236)	0.575 (0.348)	12.18 (2.399)	179 (81.7)	68 (19.7)	81 (27.2)	29.01 (97.96)
50% of Full at Reduced Engine Speed—Two Hours 9th Gear											
168.04 (125.31)	9339 (41.63)	6.73 (10.84)	1365	1.76	10.896 (41.266)	0.432 (0.273)	13.42 (3.038)	179 (81.7)	67 (19.2)	83 (28.3)	29.01 (97.96)

MAXIMUM POWER IN SELECTED GEARS

257.77 (192.22)	34519 (153.53)	2.80 (4.51)	2211	14.83	2nd Gear	177 (80.6)	66 (18.9)	72 (22.2)	28.73 (97.02)
270.50 (368.33)	31588 (139.62)	3.34 (5.37)	2099	9.75	3rd Gear	179 (81.7)	70 (21.1)	78 (25.6)	28.73 (97.08)
299.00 (223.01)	26080 (119.73)	4.17 (6.72)	2097	6.19	4th Gear	180 (82.2)	65 (18.3)	71 (21.7)	28.93 (97.69)
301.86 (224.93)	22225 (98.86)	5.09 (8.19)	2101	4.81	5th Gear	181 (82.5)	65 (18.3)	72 (22.2)	28.93 (97.69)
303.78 (226.51)	18716 (83.25)	6.09 (9.80)	2100	3.71	6th Gear	181 (82.5)	66 (18.9)	74 (23.3)	28.94 (97.73)
306.43 (228.31)	15966 (71.05)	7.20 (11.58)	2101	3.25	7th Gear	180 (82.2)	66 (18.9)	73 (22.8)	28.94 (97.73)
300.95 (224.42)	12987 (57.77)	8.09 (13.99)	2100	2.50	8th Gear	180 (82.2)	66 (18.9)	74 (23.3)	28.94 (97.73)

LUGGING ABILITY IN 6th GEAR

Crankshaft Speed rpm	2100	1900	1678	1486	1262	1052
Pull—lbs (kN)	18716 (83.25)	20057 (89.20)	21607 (96.15)	22155 (99.30)	21644 (97.01)	20379 (91.34)
Increase in Pull %	0	7	15	18	16	9
Power—Hp (kW)	303.78 (226.51)	291.78 (217.59)	277.89 (207.22)	248.27 (185.14)	209.28 (156.06)	164.40 (122.60)
Speed—Mph (km/h)	6.09 (9.80)	5.45 (8.78)	4.82 (7.76)	4.20 (6.76)	3.63 (5.84)	3.05 (4.47)
Slip %	3.71	4.18	4.49	4.81	4.49	4.49

Department of Agricultural Engineering

Dates of Test: June 9-27, 1984

Manufacturers: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8577 **Fuel weight** 6.975 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SF, CD **To motor** 6.351 gal *(24.043 l)* **Drained from motor** 5.117 gal *(19.369 l)* **Transmission lubricant** API service class CD engine oil certified to T0-2 **Hydraulic fluid** Case TCH fluid **Final drive lubricant** Case FDL fluid **Total time engine was operated** 39.5 hours.

ENGINE: Make SAAB-Scania Diesel **Type** eight cylinder vee with turbocharger **Serial No.** 5521227 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.00" × 5.51" *(127 mm × 140 mm)* **Compression ratio** 15.5 to 1 **Displacement** 866 cu in *(14191 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** full flow centrifugal, separate cartridge for turbocharger oil **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission oil **Fuel filter** four paper cartridges and prestrainer **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type four wheel drive with duals **Serial No.** *8865228* **Tread width** rear 96.1" *(2441 mm)* to 153.5" *(3950 mm)* front 96.1" *(2441 mm)* to 153.5" *(3950 mm)* **Wheel base** 124.8" *(3170 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 72.5" *(1842 mm)* Vertical distance above roadway 44.0" *(1118 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Advertised speeds mph** *(km/h)* first 2.5 *(4.0)* second 3.0 *(4.8)* third 3.5 *(5.7)* fourth 4.2 *(6.8)* fifth 5.1 *(8.2)* sixth 6.1 *(9.9)* seventh 7.1 *(11.4)* eighth 8.1 *(13.0)* ninth 10.1 *(16.2)* tenth 12.1 *(19.5)* eleventh 14.5 *(23.4)* twelfth 17.2 *(27.7)* reverse 3.1 *(5.0)*, 8.9 *(14.4)* **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** dual caliper disc hydraulically operated by foot pedal and mechanically by hand lever **Steering** hydrostatic for front wheels, electro hydraulic for rear wheels, front and rear wheels may be steered independently or together **Turning radius** (on concrete surface with front wheel steering) right 353.3 *(8.97 m)* left 353.3 *(8.97 m)* (on concrete surface with four wheel steering) right 221.8" *(5.63 m)* left 221.8" *(5.63 m)* **Turning space diameter** (on concrete surface with front wheel steering) right 751.5" *(19.09 m)* left 751.5" *(19.09 m)* (on concrete surface with four wheel steering) right 492.8" *(12.52 m)* left 492.8" *(12.52 m)* **Power take-off** 991 rpm at 2100 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	76.5
75% of Full at Maximum Power—Ten Hours	75.5
50% of Full at Maximum Power—Two Hours	74.5
50% of Full at Reduced Engine Speed—Two Hours	75.5
Bystander in 12th gear	90.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Inner Two 24.5-32; 10; 10 *(110)* Outer Two 24.5-32; 10; 12 *(85)*	Inner Two 24.5-32; 10; 10 *(110)* Outer Two 24.5-32; 10; 12 *(85)*
Ballast	—Liquid (each inner)	1602 lb *(735 kg)*	None
	—Effect of front wts (each)	-345 lb *(-156 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Inner Two 24.5-32; 10; 18 *(125)* Outer Two 24.5-32; 10; 14 *(95)*	Inner Two 24.5-32; 10; 18 *(125)* Outer Two 24.5-32; 10; 14 *(95)*
Ballast	—Liquid (each inner)	1745 lb *(791 kg)*	None
	—Effect of front wts (each)	795 lb *(361 kg)*	None
Height of Drawbar		22.5 in *(570 mm)*	22.5 in *(570 mm)*
Static Weight with Operator	—Rear	15080 lb *(6831 kg)*	15115 lb *(5949 kg)*
	—Front	24870 lb *(11281 kg)*	18280 lb *(8255 kg)*
	—Total	39950 lb *(18112 kg)*	33,315 lb *(14204 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 144°F *(62.2 °C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1530, July 20, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Case 4994 Powershift Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1507
FORD 1910 (12x4) MANUAL DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/l)	Temperature °F (°C) Cooling medium	Air out bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—540 rpm)								
98.60 (81.31)	2500	2.295 (8.685)	0.547 (0.333)	12.79 (3.380)	186 (85.6)	97 (13.0)	75 (23.8)	28.60 (97.37)
Standard Power Take-off Speed (540 rpm)—One Hour								
98.90 (81.69)	2496	2.185 (8.271)	0.541 (0.329)	12.94 (3.549)	187 (86.2)	97 (13.0)	75 (23.8)	28.60 (97.46)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
25.09 (18.71)	2500	1.946 (7.367)	0.545 (0.330)	12.89 (3.540)	178 (80.8)	56 (14.2)	70 (25.3)	....
0.00 (0.00)	2097	0.755 (2.970)	....	....	102 (71.9)	57 (13.6)	74 (23.3)	....
12.85 (9.58)	2044	1.320 (4.998)	0.710 (0.437)	9.73 (1.917)	168 (75.6)	57 (13.9)	75 (23.9)	....
20.63 (21.55)	2301	2.246 (8.505)	0.549 (0.334)	12.75 (2.511)	185 (85.0)	56 (13.3)	74 (23.1)	....
6.49 (4.84)	2070	1.029 (3.895)	1.109 (0.673)	6.51 (1.349)	154 (79.3)	56 (14.2)	76 (24.4)	....
19.08 (14.23)	2014	1.903 (7.205)	0.598 (0.363)	11.00 (2.169)	170 (76.7)	56 (14.4)	75 (23.8)	....
Ave 15.80 (11.78)	2018	1.489 (5.634)	0.579 (0.352)	10.92 (2.316)	171 (77.2)	57 (13.9)	75 (24.2)	28.60 (97.46)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/l)	Temp. °F (°C) Cooling med.	Air out bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (3-3) Gear											
94.70 (70.62)	1689 (7.51)	3.70 (5.96)	2498	0.04	2.292 (8.681)	0.589 (0.358)	11.14 (2.365)	179 (79.7)	48 (8.9)	64 (17.9)	28.04 (94.96)
75% of Pull at Maximum Power—Ten Hours 9th (3-3) Gear											
90.10 (71.66)	1250 (5.56)	6.02 (9.69)	2501	4.71	1.806 (6.837)	0.564 (0.342)	10.86 (2.146)	171 (77.2)	46 (8.0)	48 (8.8)	28.03 (94.93)
50% of Pull at Maximum Power—Two Hours 9th (3-3) Gear											
19.88 (18.31)	880 (3.73)	6.18 (9.95)	2055	8.97	1.046 (3.797)	0.768 (0.464)	9.17 (1.807)	171 (76.9)	58 (13.9)	57 (13.9)	28.03 (94.93)
50% of Pull at Reduced Engine Speed—Two Hours 11th (4-2) Gear											
15.92 (10.31)	838 (3.73)	6.19 (9.96)	1949	9.19	1.139 (4.273)	0.871 (0.548)	12.25 (2.412)	166 (74.3)	58 (10.6)	59 (15.3)	28.05 (94.70)
MAXIMUM POWER IN SELECTED GEARS											
21.21 (15.82)	3340 (14.86)	2.58 (4.15)	2501	14.80	6th (3-3) Gear			175 (79.5)	45 (7.2)	61 (16.4)	28.04 (94.71)
94.10 (70.20)	2897 (12.71)	3.17 (5.11)	2500	11.80	7th (3-1) Gear			175 (79.4)	46 (7.8)	58 (11.1)	28.04 (94.71)
95.10 (70.93)	2110 (9.38)	4.46 (7.18)	2499	7.90	8th (3-2) Gear			174 (78.8)	46 (7.8)	58 (11.1)	28.04 (94.71)
25.63 (18.96)	1073 (7.45)	5.60 (9.14)	2499	5.19	9th (3-3) Gear			175 (79.3)	47 (8.2)	58 (11.7)	28.04 (94.71)
95.57 (19.97)	1414 (6.30)	6.78 (10.92)	2500	3.11	10th (4-1) Gear			175 (79.4)	47 (8.3)	58 (11.7)	28.03 (94.68)
24.78 (18.48)	796 (4.03)	9.54 (15.02)	2500	3.08	11th (4-2) Gear			175 (79.3)	47 (8.3)	58 (11.7)	28.03 (94.68)

Department of Agricultural Engineering

Dates of Test: March 20 to April 12, 1984

Manufacturer: ISHIKAWAJIMA-SHIBAURA MACHINERY COMPANY, LTD., Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 46.0 (rating taken from oil company's inspection data) Specific gravity converted to 60°F 60° (15°/15°) 0.8405 Fuel weight 6.996 lbs/gal *(0.839 kg/l)* Oil SAE 30 API service classification SE, SF, CC, CD To motor 1.005 gal *(6.077 l)* Drained from motor 1.442 gal *(5.459 l)* Transmission and final drive lubricant Ford 134 fluid Total time engine was operated 41.5 hours.

ENGINE: Make Shibaura Diesel Type three cylinder vertical Serial No. "T855A-10465" Crankshaft lengthwise Rated rpm 2500 Bore and stroke 3.346" × 3.937" *(85 mm × 100 mm)* Compression ratio 21 to 1 Displacement 103.9 cu in *(1703 ml)* Starting system 12 volt Lubrication pressure Air cleaner one paper element Oil filter one full flow cartridge Fuel filter one paper element Muffler vertical Cooling medium temperature control one thermostat.

CHASSIS: Type standard Serial No. "1910°UP002255" Tread width rear 45.7" *(1161 mm)* to 61.0" *(1549 mm)* front 43.5" *(1105 mm)* to 57.5" *(1461 mm)* Wheel base 66.3" *(1684 mm)* Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.0" *(660 mm)* Vertical distance above roadway 27.3" *(699 mm)* Horizontal distance from center of rear wheel tread 0.1" *(2.5 mm)* to the left Hydraulic control system direct engine drive Transmission selective gear fixed ratio Advertised speeds mph *(km/h)* first 0.7 *(1.1)* second 1.0 *(1.6)* third 1.2 *(1.9)* fourth 1.6 *(2.6)* fifth 2.2 *(3.5)* sixth 2.8 *(4.5)* seventh 3.7 *(6.0)* eighth 5.0 *(8.0)* ninth 6.2 *(10.0)* tenth 7.3 *(11.7)* eleventh 9.9 *(15.9)* twelfth 12.5 *(20.1)* reverse 0.8 *(1.3)*, 1.9 *(3.0)*, 4.3 *(6.9)*, 8.6 *(13.8)* Clutch single dry disc operated by foot pedal Brakes drum and shoe operated by two foot pedals which can be locked together Steering mechanical Turning radius (on concrete surface with brake applied) right 96.5" *(2.45 m)* left 96.5" *(2.45 m)* (on concrete surface without brake) right 104.3" *(2.63 m)* left 104.3" *(3.65 m)* Turning space diameter (on concrete surface with brake applied) right 199" *(5.05 m)* left 199" *(5.05 m)* (on concrete surface without brake) right 215" *(5.45 m)* left 215" *(5.45 m)* Power take-off 540 rpm at 2436 engine rpm.

LUGGING ABILITY IN 9th (3-3) GEAR

Crankshaft Speed rpm	2499	2251	1998	1754	1495	1254
Pull—lbs (kN)	1675 (7.45)	1757 (7.79)	1851 (8.30)	1867 (8.37)	1900 (8.53)	1886 (8.36)
Increase in Pull %	0	4	11	11	14	11
Power—Hp (kW)	25.45 (18.98)	25.60 (17.66)	22.32 (16.64)	19.75 (14.72)	17.15 (12.79)	13.90 (10.36)
Speed—Mph (km/h)	5.09 (8.16)	5.11 (8.23)	4.52 (7.28)	5.06 (8.50)	5.57 (5.42)	2.79 (4.49)
Slip %	6.19	6.55	6.85	7.05	7.15	6.75

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	91.5
75% of Pull at Maximum Power—Ten Hours	91.0
50% of Pull at Maximum Power—Two Hours	91.0
50% of Pull at Reduced Engine Speed—Two Hours	86.0
Bystander in 12th (4-3) gear	92.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—Size, size, ply & psi (kPa):	Two 13.6-24, 6, 14 (95):	Two 13.6-24, 6, 14 (95):
Ballast	—Liquid (wells):	380 lb (163 kg)	None
	—Cast iron (each):	720 lb (100 kg)	None
Front Tires	—Size, size, ply & psi (kPa):	Two 5.50-16, 6, 40 (275)	Two 5.50-16, 6, 40 (275)
Ballast	—Liquid (each):	None	None
	—Cast iron (each):	55 lb (25 kg)	None
Height of Drawbar		15 in (405 mm)	16 in (400 mm)
Basic Weight with Operator—Rear		3040 lb (1379 kg)	1080 lb (453 kg)
	—Front	1210 lb (549 kg)	1160 lb (499 kg)
	—Total	4250 lb (1928 kg)	2980 lb (1152 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 135°F *(57.0°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1507, June 14, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 1910 (12x4) Manual Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin J. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1508
FORD 1910 (12x4) SYNCHRO DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
Rated Engine Speed—Two Hours (PTO Speed—540 rpm)								
29.52 (21.27)	2500	2.261 (8.560)	0.555 (0.338)	12.61 (2.685)	194 (90.1)	61 (16.1)	75 (23.9)	28.86 (97.75)
Standard Power Take-off Speed (540 rpm)—One Hour								
28.50 (21.11)	2454	2.267 (8.581)	0.561 (0.341)	12.48 (2.460)	195 (91.1)	62 (16.7)	76 (24.4)	28.87 (97.79)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
24.97 (18.62)	2574	1.924 (7.284)	0.540 (0.328)	12.97 (2.556)	183 (83.6)	62 (16.6)	74 (23.3)	.....
0.00 (0.00)	2698	0.754 (2.855)	.....	.....	165 (72.8)	62 (16.6)	75 (23.9)	.....
12.74 (9.50)	2628	1.294 (4.899)	0.711 (0.433)	9.84 (1.938)	168 (75.3)	62 (16.6)	76 (24.2)	.....
28.52 (21.26)	2502	2.284 (8.647)	0.561 (0.341)	12.48 (2.459)	193 (89.4)	62 (16.7)	76 (24.2)	.....
0.43 (0.79)	2650	0.994 (3.764)	1.082 (0.658)	6.47 (1.274)	156 (73.3)	61 (16.1)	76 (24.4)	.....
18.86 (14.08)	2560	1.581 (5.986)	0.588 (0.357)	11.94 (2.352)	170 (76.7)	61 (15.8)	73 (22.8)	.....
Average	**2560**	**1.472**	**0.676**	**10.38**	**175**	**62**	**75**	**28.84**
Max	**2650**	**(5.573)**	**(0.411)**	**(2.045)**	**(78.3)**	**(16.6)**	**(23.8)**	**(97.68)**

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (3-3) Gear											
24.57 (18.32)	1612 (7.17)	5.72 (9.20)	2490	5.87	2.236 (8.463)	0.637 (0.387)	10.99 (2.165)	184 (90.2)	80 (9.7)	61 (15.8)	28.94 (97.71)
75% of Full at Maximum Power—Two Hours 9th (3-3) Gear											
19.50 (14.54)	1219 (5.42)	6.00 (9.65)	2593	4.77	1.809 (6.846)	0.649 (0.395)	10.78 (2.124)	172 (77.6)	42 (5.6)	44 (6.9)	28.57 (96.67)
50% of Full at Maximum Power—Two Hours 9th (3-3) Gear											
13.31 (9.93)	813 (3.61)	6.14 (9.89)	2614	3.25	1.404 (5.343)	0.770 (0.468)	9.09 (1.791)	171 (77.2)	47 (8.3)	56 (13.1)	28.60 (91.89)
50% of Full at Reduced Engine Speed—Two Hours 11th (4-3) Gear											
13.30 (9.92)	813 (3.62)	6.14 (9.88)	1634	3.14	1.114 (4.218)	0.586 (0.357)	11.94 (2.352)	160 (70.1)	47 (8.1)	54 (12.2)	28.45 (96.00)
MAXIMUM POWER IN SELECTED GEARS											
21.92 (16.34)	3449 (15.34)	2.38 (3.84)	2568	14.95	8th (2-3) Gear			174 (79.9)	48 (7.8)	56 (12.6)	28.59 (97.87)
24.15 (18.01)	2842 (12.64)	3.19 (5.13)	2498	10.90	7th (3-1) Gear			178 (81.1)	48 (8.9)	56 (13.3)	28.96 (97.79)
25.05 (18.68)	2098 (9.33)	4.49 (7.21)	2560	7.56	8th (3-2) Gear			178 (80.8)	47 (8.3)	56 (13.6)	28.96 (97.79)
25.59 (19.08)	1681 (7.48)	5.71 (9.19)	2560	6.06	9th (3-3) Gear			176 (80.0)	46 (7.8)	53 (11.7)	28.96 (97.79)
25.02 (19.11)	1416 (6.30)	6.79 (10.92)	2560	5.12	10th (4-1) Gear			180 (81.9)	48 (8.9)	57 (13.9)	28.96 (97.79)
24.50 (18.27)	984 (4.37)	9.94 (15.04)	2560	3.74	11th (4-2) Gear			178 (81.1)	49 (9.4)	58 (14.6)	28.96 (97.79)

Department of Agricultural Engineering

Dates of Test: March 30 to April 17, 1984

Manufacturer: ISHIKAWAJIMA-SHIBAURA MACHINERY COMPANY, LTD., Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8407 **Fuel weight** 7.000 lbs/gal *(0.839 kg/l)* **Oil SAE** 30 **API service classification** SE, SF, CC, CD **To motor** 1.535 gal *(5.802 l)* **Drained from motor** 1.379 gal *(5.220 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 43.0 hours.

ENGINE: Make Shibaura Diesel **Type** three cylinder vertical **Serial No.** *T855A-10420* **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 5.346" × 3.937" *(85 mm × 100 mm)* **Compression ratio** 21 to 1 **Displacement** 105.9 cu in *(1703 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** *1910*UP00359* **Tread width** rear 45.7" *(1161 mm)* to 61.0" *(1549 mm)* front 43.5" *(1105 mm)* to 57.5" *(1461 mm)* **Wheel base** 66.3" *(1684 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.4" *(671 mm)* Vertical distance above roadway 27.5" *(699 mm)* Horizontal distance from center of rear wheel tread 0.1" *(2.5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio-Synchromesh **Advertised speeds mph (km/h)** first 0.7 *(1.1)* second 1.0 *(1.6)* third 1.2 *(1.9)* fourth 1.6 *(2.6)* fifth 2.2 *(3.5)* sixth 2.8 *(4.5)* seventh 3.7 *(6.0)* eighth 5.0 *(8.0)* ninth 6.2 *(10.0)* tenth 7.3 *(11.7)* eleventh 9.9 *(15.9)* twelfth 12.5 *(20.1)* reverse 1.0 *(1.7)*, 2.4 *(3.8)*, 5.5 *(8.5)*, 10.6 *(17.1)* **Clutch** single dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 96.5" *(2.45 m)* left 96.5" *(2.45 m)* (on concrete surface without brake) right 104.5" *(2.65 m)* left 104.5" *(2.65 m)* **Turning space diameter** (on concrete surface with brake applied) right 199" *(5.05 m)* left 199" *(5.05 m)* (on concrete surface without brake) right 215" *(5.45 m)* left 215" *(5.45 m)* **Power take-off** 540 rpm at 2454 engine rpm.

LUGGING ABILITY IN 9th (3-3) GEAR

Crankshaft Speed rpm	2500	2243	1996	1755	1485	1240
Pull—lbs (kN)	1681 (7.48)	1773 (7.95)	1851 (8.30)	1887 (8.46)	1904 (8.53)	1858 (8.33)
Increase in Pull %	0	5	10	12	13	11
Power—Hp (kW)	25.59 (19.08)	24.12 (17.99)	22.32 (16.65)	19.95 (14.87)	17.04 (12.71)	13.92 (10.38)
Speed—Mph (km/h)	5.71 (9.19)	5.10 (8.21)	4.52 (7.28)	3.96 (6.38)	3.56 (5.40)	2.81 (4.52)
Slip %	6.05	6.35	6.66	6.96	6.96	6.76

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	91.5
75% of Full at Maximum Power—Ten Hours	90.5
50% of Full at Maximum Power—Two Hours	89.5
50% of Full at Reduced Engine Speed—Two Hours	85.0
Bystander in 12th (4-3) gear	82.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 13.6-24; 4; 14 (95)	Two 13.6-24; 4; 14 (95)
Ballast	—Liquid (each)	375 lb (170 kg)	None
	—Cast Iron (each)	220 lb (100 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 5.50-16; 4; 40 (275)	Two 5.50-16; 4; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	48 lb (22 kg)	None
Height of Drawbar		16 in (405 mm)	16 in (405 mm)
Static Weight with Operator—Rear		3680 lb (1599 kg)	1995 lb (860 kg)
	—Front	1260 lb (567 kg)	1145 lb (519 kg)
	—Total	4525 lb (1962 kg)	3040 lb (1379 kg)

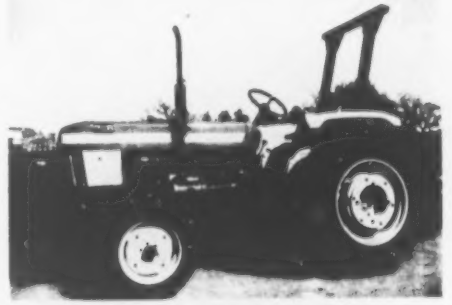
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 132°F *(55.6°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1508,** June 14, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Ford 1910 (12x4) Synchro Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1509
FORD 2110 (12x4) MANUAL DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—584 rpm)								
34.79 (25.94)	2500	2.520 (9.538)	0.507 (0.308)	13.81 (2.720)	207 (97.2)	60 (15.6)	75 (23.8)	28.89 (97.54)
Standard Power Take-off Speed (540 rpm)—One Hour								
34.91 (26.03)	2392	2.492 (9.433)	0.500 (0.304)	14.01 (2.760)	210 (98.8)	60 (15.7)	75 (24.0)	28.86 (97.46)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
30.31 (22.60)	2550	2.239 (8.532)	0.522 (0.317)	13.41 (2.643)	198 (91.9)	60 (15.6)	75 (23.9)	....
0.00 (0.00)	2683	0.906 (3.305)	....	....	165 (74.4)	60 (15.6)	75 (23.9)	....
15.46 (11.53)	2612	1.565 (5.923)	0.760 (0.461)	9.88 (1.947)	173 (78.3)	60 (15.6)	75 (23.9)	....
34.67 (25.85)	2500	2.525 (9.558)	0.510 (0.310)	13.73 (2.705)	206 (96.7)	60 (15.6)	75 (23.9)	....
7.81 (5.82)	2638	1.217 (4.609)	1.091 (0.664)	6.41 (1.263)	167 (75.0)	60 (15.6)	75 (23.9)	....
22.93 (17.10)	2502	1.903 (7.205)	0.581 (0.353)	12.05 (2.373)	184 (84.2)	60 (15.6)	75 (23.9)	....
Av 18.53 **Av** (13.82)	**2580**	**1.735** (6.599)	**0.684** (0.398)	**10.80** (2.187)	**182** (83.4)	**60** (15.6)	**75** (23.9)	**28.81** (97.59)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barom inch Hg (kPa)
Maximum Available Power—Two Hours 8th (3-2) Gear											
28.84 (21.51)	1918 (8.53)	5.64 (9.08)	2500	6.14	2.444 (9.250)	0.593 (0.361)	11.80 (2.325)	180 (81.9)	51 (10.6)	34 (11.9)	28.84 (97.57)
75% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
23.54 (17.86)	1527 (6.79)	5.80 (9.44)	2579 (9.276)	5.16	2.186 (8.276)	0.639 (0.389)	10.95 (2.157)	176 (80.1)	53 (11.7)	55 (12.8)	28.52 (96.29)
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
16.40 (12.23)	1818 (4.53)	6.04 (9.72)	2605 (6.870)	3.47 (0.471)	1.815 (1.780)	0.774 (0.471)	9.04 (1.780)	172 (77.5)	45 (6.9)	49 (9.2)	28.41 (95.94)
10% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
16.41 (12.24)	1018 (4.53)	6.05 (9.73)	1566 (4.949)	5.23	1.308 (0.339)	0.550 (2.472)	12.55 (2.472)	174 (78.9)	46 (7.8)	53 (11.7)	28.41 (95.92)
MAXIMUM POWER IN SELECTED GEARS											
24.92 (18.51)	3080 (17.21)	2.41 (3.87)	2549	14.81		5th (2-2) Gear		176 (79.7)	51 (10.6)	55 (11.7)	28.86 (97.46)
29.06 (21.67)	3704 (16.47)	2.94 (4.74)	2499	13.37		6th (2-3) Gear		176 (80.0)	51 (10.6)	53 (11.7)	28.86 (97.46)
29.91 (22.31)	2618 (11.65)	4.28 (6.90)	2501	8.19		7th (3-1) Gear		181 (82.8)	50 (10.0)	52 (11.1)	28.87 (97.49)
30.61 (22.83)	2036 (9.05)	5.64 (9.08)	2500	6.14		8th (3-2) Gear		179 (81.7)	49 (9.4)	51 (10.6)	28.88 (97.52)
30.80 (22.97)	1648 (7.33)	7.01 (11.28)	2500	4.79		9th (3-3) Gear		178 (81.1)	49 (9.4)	51 (10.6)	28.88 (97.52)
30.00 (22.37)	1160 (5.20)	9.62 (15.49)	2498	3.41		10th (4-1) Gear		179 (81.4)	50 (10.0)	52 (11.1)	28.87 (97.49)

Department of Agricultural Engineering

Dates of Test: March 30 to April 13, 1984

Manufacturer: ISHIKAWAJIMA-SHIBAURA MACHINERY COMPANY, LTD., Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8405 **Fuel weight** 6.998 lbs/gal *(0.839 kg/l)* **Oil SAE** 30 **API service classification** SE, SF, CC, CD **To motor** 1.916 gal *(7.251 l)* **Drained from motor** 1.785 gal *(6.757 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 96.5 hours.

ENGINE: Make Shibaura Diesel **Type** four cylinder vertical **Serial No.** "T854B-10092" **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.346" × 3.937" *(85 mm × 100 mm)* **Compression ratio** 21 to 1 **Displacement** 138.5 cu in *(2270 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel** filter one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** "2110°UV00043" **Tread width** rear 48.0" *(1219 mm)* to 71.8" *(1824 mm)* front 48.0" *(1219 mm)* to 72.0" *(1829 mm)* **Wheel base** 73.4" *(1864 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.2" *(716 mm)* Vertical distance above roadway 30.3" *(770 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.0 *(1.6)* second 1.5 *(2.1)* third 1.6 *(2.6)* fourth 2.5 *(3.7)* fifth 3.0 *(4.8)* sixth 3.6 *(5.8)* seventh 5.0 *(8.0)* eighth 6.4 *(10.3)* ninth 7.8 *(12.6)* tenth 10.8 *(17.4)* eleventh 13.7 *(22.0)* twelfth 16.5 *(26.6)* reverse 1.2 *(1.9)*, 2.7 *(4.3)*, 5.8 *(9.3)*, 12.5 *(20.1)* **Clutch** single dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 114.2" *(2.90 m)* left 114.2" *(2.90 m)* (on concrete surface without brake) right 125.0" *(3.18 m)* left 125.0" *(3.18 m)* **Turning space diameter** (on concrete surface with brake applied) right 235" *(5.96 m)* left 235" *(5.96 m)* (on concrete surface without brake) right 256" *(6.50 m)* left 256" *(6.50 m)* **Power take-off** 540 rpm at 2392 engine rpm.

LUGGING ABILITY IN 9th (3-2) GEAR

Crankshaft Speed rpm	2500	2253	1999	1750	1502	1254
Pull—lbs (kN)	2056 (9.05)	2270 (10.17)	2421 (10.85)	2432 (10.90)	2399 (10.73)	2377 (10.63)
Increase in Pull %	0	11	19	19	18	17
Power—Hp (kW)	30.61 (22.83)	30.54 (22.78)	28.71 (21.41)	25.29 (18.88)	21.37 (15.94)	17.41 (12.98)
Speed—Mph (km/h)	5.64 (9.08)	5.08 (8.12)	4.45 (7.16)	3.89 (6.25)	3.34 (5.38)	2.75 (4.42)
Slip %	6.14	6.90	7.44	7.77	7.44	7.23

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	90.5
75% of Pull at Maximum Power—Ten Hours	91.0
50% of Pull at Maximum Power—Two Hours	90.5
50% of Pull at Reduced Engine Speed—Two Hours	84.5
Bystander in 12th (4-3) gear	82.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 13.6-28; 4; 14 (95)	Two 13.6-28; 4; 14 (95)
Ballast	—Liquid (each)	632 lb (286 kg)	None
	—Cast Iron (each)	250 lb (113 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 6.00-16; 4; 32 (220)	Two 6.00-16; 4; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	50 lb (24 kg)	None
Height of Drawbar		16.5 in (420 mm)	16.5 in (420 mm)
Static Weight with Operator	—Rear	3650 lb (1656 kg)	2985 lb (1937 kg)
	—Front	1455 lb (660 kg)	1350 lb (612 kg)
	—Total	5106 lb (2316 kg)	3683 lb (1669 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 141°F *(60.6°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection, it was found that the intake valves and valve seats on cylinders 1 and 4 had adhesive wear markings (metal transfer). In cylinder No. 4, light scratches were found.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1509**, June 14, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 2110 (12x4) Manual Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1510
FORD 2110 (12x4) SYNCHRO DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air ent. carb	Air dry bulb	Barometer inch Hg (kPa)
Rated Engine Speed—Two Hours (PTO Speed—544 rpm)								
55.11 (36.18)	2500	2.550 (9.650)	0.506 (0.308)	13.80 (2.723)	201 (94.0)	58 (14.3)	75 (23.6)	28.95 (97.76)
Standard Power Take-off Speed (540 rpm)—One Hour								
53.58 (36.32)	2504	2.530 (9.611)	0.500 (0.304)	14.01 (2.759)	206 (96.7)	59 (14.4)	76 (24.3)	28.95 (97.76)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
50.60 (22.82)	2502	2.391 (9.033)	0.505 (0.317)	13.42 (2.643)	194 (89.7)	58 (14.4)	75 (23.9)	—— ——
0.00 (0.00)	2650	0.950 (3.598)	—— ——	—— ——	166 (74.2)	58 (14.4)	75 (23.9)	—— ——
15.58 (11.62)	2612	1.380 (5.980)	0.710 (0.433)	9.80 (1.941)	171 (76.9)	57 (13.9)	75 (23.9)	—— ——
35.21 (26.26)	2600	2.046 (9.639)	0.506 (0.308)	13.83 (2.734)	190 (87.8)	57 (13.9)	74 (23.3)	—— ——
7.86 (5.86)	2655	1.230 (4.657)	1.085 (0.660)	6.50 (1.259)	167 (75.0)	59 (14.9)	77 (24.7)	—— ——
23.14 (17.25)	2585	1.921 (7.270)	0.581 (0.353)	12.05 (2.375)	182 (83.1)	58 (14.4)	76 (24.2)	—— ——
Air 18.73 **Air** (13.97)	2591	1.740 (6.631)	0.553 (0.337)	10.71 (2.110)	180 (81.9)	59 (14.8)	78 (24.8)	28.94 (97.73)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool. wg med	Air ent. carb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (3-2) Gear											
50.10 (22.44)	1977 (8.79)	3.71 (5.97)	2500	6.85	2.550 (9.652)	0.508 (0.308)	11.77 (2.310)	182 (83.1)	66 (7.8)	97 (13.6)	28.94 (97.72)
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
24.45 (18.24)	1530 (6.81)	5.99 (9.63)	2576	5.02	2.202 (8.336)	0.630 (0.383)	11.11 (2.188)	176 (79.7)	66 (8.8)	97 (13.9)	28.87 (97.49)
90% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
16.77 (12.51)	1080 (4.94)	6.17 (9.98)	2611	3.50	1.700 (6.709)	0.740 (0.453)	9.35 (1.842)	172 (78.3)	68 (8.8)	99 (14.7)	28.88 (97.52)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-3) Gear											
16.78 (12.52)	1021 (4.54)	6.17 (9.93)	1500	5.52	1.505 (5.166)	0.509 (0.344)	12.50 (2.452)	172 (77.5)	68 (8.6)	99 (15.0)	28.86 (97.46)
MAXIMUM POWER IN SELECTED GEARS											
29.01 (21.63)	5728 (16.38)	2.92 (4.70)	2516	14.88			6th (2-3) Gear	177 (80.3)	45 (6.1)	68 (8.9)	28.97 (97.83)
30.60 (22.82)	3029 (11.67)	4.58 (7.04)	2501	9.14			7th (3-1) Gear	176 (79.7)	45 (7.2)	81 (10.6)	28.97 (97.83)
31.01 (23.13)	2040 (9.07)	5.70 (9.10)	2500	6.91			8th (3-2) Gear	179 (81.1)	45 (7.2)	92 (11.1)	28.97 (97.83)
31.11 (23.20)	1670 (7.43)	6.99 (11.24)	2500	5.52			9th (3-3) Gear	179 (81.4)	45 (7.2)	93 (11.7)	28.97 (97.83)
30.90 (23.11)	1175 (5.22)	9.69 (15.60)	2501	3.99			10th (4-1) Gear	179 (81.7)	45 (7.2)	95 (12.0)	28.97 (97.83)

Department of Agricultural Engineering

Dates of Test: March 30 to April 9, 1984

Manufacturer: ISHIKAWAJIMA-SHIBAURA MACHINERY COMPANY, LTD., Tokyo, Japan

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8405 **Fuel weight** 6.998 lbs/gal *(0.839 kg/l)* **Oil** SAE 30 **API service classification** SE, SF, CC, CD **To motor** 1.797 gal *(6.803 l)* **Drained from motor** 1.667 gal *(6.311 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 57.5 hours.

ENGINE: **Make** Shibaura Diesel **Type** four cylinder vertical **Serial No.** *"T854B-10141"* **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.346" × 3.937" *(85 mm × 100 mm)* **Compression ratio** 21 to 1 **Displacement** 150.5 cu in *(2270 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling** medium temperature control one thermostat.

CHASSIS: **Type** standard **Serial No.** *"2110*UV00085"* **Tread width** rear 48.0" *(1219 mm)* to 71.8" *(1824 mm)* front 48.0" *(1219 mm)* to 72.0" *(1829 mm)* **Wheel base** 73.4" *(1864 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.2" *(716 mm)* Vertical distance above roadway 30.3" *(770 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio-Synchromesh **Advertised speeds mph (km/h)** first 1.0 *(1.6)* second 1.5 *(2.1)* third 1.6 *(2.6)* fourth 2.5 *(3.7)* fifth 5.0 *(4.8)* sixth 5.6 *(5.8)* seventh 5.0 *(8.0)* eighth 6.4 *(10.3)* ninth 7.8 *(12.6)* tenth 10.8 *(17.4)* eleventh 13.7 *(22.0)* twelfth 16.5 *(26.6)* reverse 1.4 *(2.3)*, 3.1 *(5.0)*, 6.9 *(11.1)*, 14.7 *(23.7)* **Clutch** single dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 114.2" *(2.90 m)* left 114.2" *(2.90 m)* (on concrete surface without brake) right 125.0" *(3.18 m)* left 125.0" *(3.18 m)* **Turning space diameter** (on concrete surface with brake applied) right 235" *(5.96 m)* left 235" *(5.96 m)* (on concrete surface without brake) right 250" *(6.50 m)* left 250" *(6.50 m)* **Power take-off** 540 rpm at 2504 engine rpm.

LUGGING ABILITY IN 8th (3-2) GEAR

Crankshaft Speed rpm	2500	2256	1987	1746	1496	1242
Pull—lbs (kN)	2040 (9.07)	2255 (10.02)	2500 (11.12)	2675 (11.90)	2450 (10.90)	2014 (8.96)
Increase in Pull %	0	10	10	15	20	10
Power—Hp (kW)	31.01 (23.13)	30.04 (22.70)	28.76 (21.45)	24.90 (18.57)	21.92 (16.35)	17.96 (13.39)
Speed—Mph (km/h)	5.70 (9.10)	5.11 (8.22)	4.50 (7.24)	3.68 (5.92)	3.36 (5.40)	2.79 (4.49)
Slip %	6.91	7.61	8.04	8.25	8.57	8.25

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Minimum Available Power—Two Hours	92.0
75% of Pull at Maximum Power—Ten Hours	91.5
50% of Pull at Maximum Power—Two Hours	92.0
50% of Pull at Reduced Engine Speed—Two Hours	88.5
Bystander in 12th (4-3) gear	92.5

TIRE BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—Size, size, ply & psi (kPa)	Two 15.5-38, 4, 14 (95)	Two 15.5-38, 4, 14 (95)
Ballast	—Liquid (each)	485 lb (195 kg)	None
	—Cast Iron (each)	250 lb (113 kg)	None
Front Tires	—Size, size, ply & psi (kPa)	Two 6.00-16, 4, 32 (220)	Two 6.00-16, 4, 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	50 lb (23 kg)	None
Height of Drawbar		16.5 in (420 mm)	16.5 in (420 mm)
Static Weight with Operator—Rear		5880 lb (2670 kg)	2580 lb (1045 kg)
—Front		3480 lb (1662 kg)	1500 lb (617 kg)
—Total		9130 lb (2318 kg)	3980 lb (1659 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 141°F *(60.6°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection, it was found that the intake valves and valve seats on cylinders 1, 2 and 3 had adhesive wear markings (metal transfer).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1510,** June 14, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

R. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 2110 (12x4) Synchro Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1514—FORD TW-5 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barometer inch Hg (kPa)
Rated Engine Speed—Two Hours (PTO Speed—1190 rpm)								
105.74 (78.85)	2300	7.103 (26.886)	0.470 (0.286)	14.89 (2.933)	211 (99.3)	56 (13.6)	75 (23.7)	29.07 (98.10)
Standard Power Take-off Speed (1000 rpm)—One Hour								
96.83 (72.20)	1919	6.241 (23.621)	0.451 (0.274)	15.52 (3.057)	206 (96.7)	57 (13.9)	75 (23.9)	29.06 (98.11)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
92.15 (68.70)	2358	6.259 (23.618)	0.474 (0.288)	14.77 (2.909)	202 (94.4)	57 (13.6)	75 (23.6)	....
0.00 (0.00)	2436	2.075 (7.856)	....	....	183 (83.6)	57 (13.9)	76 (24.4)	....
46.98 (35.04)	2406	3.949 (14.950)	0.588 (0.358)	11.90 (2.344)	189 (86.9)	58 (14.2)	75 (23.6)	....
107.19 (79.93)	2300	7.161 (27.107)	0.467 (0.284)	14.97 (2.949)	213 (100.3)	57 (13.9)	74 (23.3)	....
23.66 (17.64)	2423	2.942 (11.135)	0.870 (0.529)	8.04 (1.584)	184 (84.4)	58 (14.2)	75 (23.6)	....
69.91 (52.13)	2387	4.996 (18.910)	0.500 (0.304)	13.99 (2.757)	194 (90.0)	58 (14.4)	75 (23.9)	....
Av 56.85 (42.24)	2385	4.560 (17.263)	0.565 (0.343)	12.42 (2.447)	194 (90.0)	57 (14.0)	75 (23.8)	29.04 (98.06)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
92.62 (69.07)	6453 (28.70)	5.38 (8.66)	2299	5.60	7.047 (26.675)	0.532 (0.324)	13.14 (2.589)	217 (102.8)	60 (15.6)	70 (20.8)	28.59 (96.53)
75% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
74.90 (55.85)	4960 (22.06)	5.86 (9.11)	2378	3.90	5.802 (21.963)	0.542 (0.330)	12.91 (2.343)	206 (96.4)	62 (16.7)	70 (21.1)	28.96 (97.80)
50% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
51.35 (38.28)	3308 (14.71)	5.82 (9.37)	2411	2.60	4.510 (17.071)	0.615 (0.374)	11.38 (2.242)	198 (91.9)	63 (17.2)	75 (23.9)	28.60 (96.58)
80% of Pull at Reduced Engine Speed—Two Hours 11th (6L) Gear											
51.27 (38.23)	3307 (14.71)	5.81 (9.36)	1558	2.60	5.631 (13.743)	0.495 (0.301)	14.12 (2.782)	195 (90.3)	65 (18.3)	80 (26.4)	28.61 (96.61)
MAXIMUM POWER IN SELECTED GEARS											
82.80 (61.74)	12249 (54.48)	2.53 (4.08)	2333	14.67	3rd (2L) Gear			208 (97.8)	51 (10.6)	56 (13.3)	28.56 (96.64)
89.79 (66.95)	10146 (45.13)	3.32 (5.34)	2302	9.92	4th (3L) Gear			217 (102.5)	52 (11.1)	59 (14.9)	28.56 (96.64)
89.55 (66.63)	8842 (43.78)	3.60 (5.48)	2300	9.50	5th (2H) Gear			214 (101.1)	52 (11.1)	59 (15.0)	28.56 (96.64)
90.60 (67.63)	7711 (34.30)	4.41 (7.10)	2300	7.01	6th (3H) Gear			217 (102.5)	53 (11.7)	60 (15.6)	28.57 (96.68)
93.13 (69.45)	7618 (33.88)	4.58 (7.38)	2299	6.86	7th (4L) Gear			217 (102.8)	54 (12.2)	61 (16.1)	28.57 (96.68)
94.89 (70.76)	6615 (29.41)	5.38 (8.66)	2300	5.64	8th (5L) Gear			219 (103.6)	57 (13.9)	65 (18.3)	28.56 (96.64)
91.85 (68.49)	5717 (25.43)	6.02 (9.70)	2300	4.70	9th (4H) Gear			217 (102.8)	54 (12.2)	61 (16.1)	28.58 (96.71)
94.14 (70.20)	5024 (22.35)	7.03 (11.31)	2298	3.98	10th (5H) Gear			218 (103.1)	54 (12.2)	61 (16.1)	28.57 (96.68)
95.27 (71.04)	4196 (18.66)	8.52 (13.70)	2299	3.34	11th (6L) Gear			217 (102.8)	55 (12.8)	61 (16.1)	28.56 (96.64)

Department of Agricultural Engineering

Dates of Test: April 26 to May 16, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity** converted to 60°/60° (15°/15°) 0.8402 **Fuel weight** 6.996 lbs/gal (0.838 kg/l) **Oil** SAE 30 **API service classification** SE, CC, CD **To motor** 4.224 gal (15.989 l) **Drained from motor** 3.772 gal (14.278 l) **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 53.0 hours.

ENGINE: Make Ford Diesel **Type** six cylinder vertical **Serial No.** °G735576° **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.4" × 4.4" (112 mm × 112 mm) **Compression ratio** 16.3 to 1 **Displacement** 401 cu in (6572 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan.

CHASSIS: Type standard with duals **Serial No.** °C715304° **Tread width** rear 60" (1524 mm) to 120" (3048 mm) front 60" (1524 mm) to 84" (2134 mm) **Wheel base** 109.7" (2786 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.3" (745 mm) Vertical distance above roadway +2.8" (1087 mm) Horizontal distance from center of rear wheel tread 0.2" (5 mm) to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.0 (3.1) second 2.5 (4.0) third 3.0 (4.8) fourth 3.8 (6.1) fifth 3.9 (6.2) sixth 4.9 (7.8) seventh 5.1 (8.1) eighth 5.9 (9.4) ninth 6.5 (10.5) tenth 7.5 (12.1) eleventh 9.1 (14.6) twelfth 11.4 (18.4) thirteenth 11.7 (18.8) fourteenth 14.7 (23.6) fifteenth 15.2 (24.5) sixteenth 19.6 (31.5) reverse 2.1 (3.4), 2.7 (4.4), 6.3 (10.2), 8.1 (13.1) **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 159.6" (4.05 m) left 159.6" (4.05 m) (on concrete surface without brake) right 174" (4.42 m) left 174" (4.42 m) **Turning space diameter** (on

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
95.75 (69.91)	6445 (28.67)	5.46 (8.78)	2300	5.41	6.985 (26.432)	0.521 (0.317)	13.43 (2.645)	214 (101.1)	61 (16.1)	68 (19.7)	29.07 (98.17)
MAXIMUM POWER IN SELECTED GEARS											
76.98 (57.40)	13718 (61.02)	2.10 (3.39)	2342	14.34	2nd (1H) Gear			202 (94.2)	54 (12.2)	60 (15.6)	29.10 (98.27)
90.28 (67.32)	12866 (57.23)	2.63 (4.23)	2301	9.26	3rd (2L) Gear			209 (98.1)	55 (12.8)	62 (16.7)	29.11 (98.30)
95.49 (69.72)	10187 (45.31)	3.44 (5.54)	2299	5.72	4th (3L) Gear			208 (97.8)	56 (13.3)	63 (17.2)	29.12 (98.33)
92.86 (69.25)	9877 (43.93)	3.53 (5.67)	2300	5.41	5th (2H) Gear			210 (98.9)	56 (13.3)	63 (17.2)	29.12 (98.33)
95.15 (69.46)	7764 (34.53)	4.50 (7.24)	2299	4.17	6th (3H) Gear			212 (99.7)	56 (13.3)	63 (17.2)	29.12 (98.33)
94.23 (70.27)	7555 (33.60)	4.68 (7.53)	2300	3.95	7th (4L) Gear			215 (101.4)	56 (13.3)	64 (17.8)	29.13 (98.37)
95.89 (71.51)	6592 (29.32)	5.45 (8.78)	2300	3.45	8th (5L) Gear			215 (101.4)	57 (13.9)	65 (18.3)	29.14 (98.40)
92.65 (69.09)	5721 (25.45)	6.07 (9.77)	2299	2.88	9th (4H) Gear			215 (100.6)	56 (13.3)	64 (17.8)	29.13 (98.37)
94.41 (70.40)	5012 (22.29)	7.06 (11.37)	2300	2.72	10th (5H) Gear			214 (100.8)	56 (13.3)	64 (17.8)	29.13 (98.37)
95.67 (69.85)	4117 (18.31)	8.53 (13.73)	2301	2.25	11th (6L) Gear			214 (101.1)	57 (13.9)	65 (18.3)	29.14 (98.40)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 192°F (89.0°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h). This tractor did not attain the estimated 15.00 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1514**, June 21, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

TIRES, BALLAST AND WEIGHT		Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast	Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; 18 (125)	Four 18.4-38; 8; 18 (125)	Four 18.4R38; 8; 18 (125)	Four 18.4R38; 8; 18 (125)
Ballast	—Liquid (each inner)	585 lb (265 kg)	None	528 lb (239 kg)	None
	—Cast Iron (each)	None	None	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	86 lb (39 kg)	None	70 lb (32 kg)	None
Height of Drawbar		19.5 in (495 mm)	19.5 in (495 mm)	19 in (485 mm)	19 in (485 mm)
Static Weight with Operator	—Rear	10810 lb (4903 kg)	9640 lb (4373 kg)	10855 lb (4924 kg)	9800 lb (4445 kg)
	—Front	3820 lb (1642 kg)	3450 lb (1565 kg)	3590 lb (1628 kg)	3450 lb (1565 kg)
	—Total	14430 lb (6545 kg)	13090 lb (5938 kg)	14445 lb (6552 kg)	13250 lb (6010 kg)

Ford TW-5 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

LUGGING ABILITY IN 9th (SL) GEAR

Crankshaft Speed rpm	2300	2071	1857	1607	1372	1148
Pull—lbs (kN)	6613 (29.41)	7052 (31.61)	7297 (32.71)	7541 (33.80)	7617 (34.14)	7304 (34.04)
Increase in Pull %	0	7	10	14	15	15
Power—Hp (kW)	94.80 (70.76)	90.65 (67.66)	82.96 (61.89)	74.74 (55.73)	64.43 (48.04)	53.71 (40.05)
Speed—Mph (km/h)	3.58 (5.66)	4.02 (7.76)	4.26 (6.86)	3.72 (5.98)	3.17 (5.10)	2.65 (4.27)
Slip %	5.64	6.02	6.49	6.63	6.63	6.78

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	81.5	81.0
75% of Pull at Maximum Power—Ten Hours		81.0
90% of Pull at Maximum Power—Two Hours		81.0
90% of Pull at Reduced Engine Speed—Two Hours		80.0
Bystander in 15th (8L) gear		90.5

concrete surface with brake applied) right 324" *(8.23 m)* left 324" *(8.23 m)* (on concrete surface without brake) right 360" *(9.14 m)* left 360" *(9.14 m)* **Power take-off** 540 rpm at 1875 engine rpm and 1000 rpm at 1919 engine rpm.

REPAIRS and ADJUSTMENTS: During preliminary PTO tests, two fuel injectors were removed, adjusted and reinstalled.

NEBRASKA TRACTOR TEST 1515—FORD TW-15 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
Maximum Power and Fuel Consumption								
Rated Engine Speed—Two Hours (PTO Speed—1147 rpm)								
121.40 (90.53)	2200	7.094 (29.121)	0.443 (0.370)	15.78 (3.109)	195 (90.6)	64 (17.8)	75 (23.9)	28.99 (97.89)
Standard Power Take-off Speed (1000 rpm)—One Hour								
117.83 (87.87)	1918	6.975 (26.391)	0.414 (0.252)	16.90 (3.329)	193 (89.4)	65 (18.1)	75 (23.9)	28.94 (97.73)
Varying Power and Fuel Consumption—Two Hours								
108.57 (80.96)	2516	7.511 (27.676)	0.471 (0.287)	14.85 (2.923)	194 (89.7)	65 (18.1)	75 (23.9)	....
0.00 (0.00)	2430	2.414 (9.139)	....	....	182 (83.3)	64 (17.8)	75 (23.6)	....
55.68 (41.52)	2575	4.837 (18.310)	0.608 (0.370)	11.51 (2.368)	186 (85.3)	64 (17.8)	74 (23.3)	....
121.75 (90.79)	2200	7.695 (29.120)	0.442 (0.269)	15.83 (3.118)	198 (91.9)	64 (17.8)	74 (23.1)	....
28.12 (20.97)	2405	3.625 (13.716)	0.901 (0.548)	7.76 (1.529)	185 (84.7)	64 (17.8)	74 (23.1)	....
82.52 (61.54)	2546	6.141 (23.244)	0.521 (0.317)	13.44 (2.647)	188 (86.6)	65 (18.1)	75 (23.9)	....
Av 86.11 Av (99.38)	2548	5.387 (20.301)	0.568 (0.346)	12.30 (2.440)	188 (86.9)	64 (17.9)	74 (23.3)	28.80 (97.56)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Coolant med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
105.89 (78.96)	7778 (34.60)	5.11 (8.22)	2199	6.12	7.654 (28.973)	0.506 (0.308)	13.83 (2.723)	200 (93.1)	52 (10.8)	59 (15.0)	28.73 (97.00)
75% of Full at Maximum Power—Two Hours 8th (5L) Gear											
86.94 (64.76)	5903 (26.26)	5.52 (8.88)	2338	4.58	6.757 (25.691)	0.547 (0.333)	12.86 (2.521)	197 (91.4)	51 (10.3)	54 (12.1)	28.61 (96.62)
50% of Full at Maximum Power—Two Hours 8th (5L) Gear											
50.64 (44.47)	3936 (17.51)	5.68 (9.14)	2366	3.00	5.482 (20.751)	0.643 (0.391)	10.88 (2.149)	193 (89.2)	55 (12.3)	64 (17.5)	28.73 (97.00)
50% of Full at Reduced Engine Speed—Two Hours 11th (6L) Gear											
50.60 (44.43)	3937 (17.51)	5.68 (9.14)	1532	5.04	4.074 (15.421)	0.478 (0.291)	14.03 (2.982)	190 (87.3)	56 (12.8)	61 (15.8)	28.72 (96.97)
Maximum Power in Selected Gears											
88.44 (65.95)	13247 (58.93)	2.50 (4.03)	2517	14.89	3rd (2L) Gear			198 (92.2)	53 (11.7)	59 (15.0)	28.60 (96.58)
99.43 (74.14)	12072 (53.70)	3.09 (4.97)	2200	12.10	4th (3L) Gear			198 (92.0)	54 (12.2)	60 (15.6)	28.60 (96.58)
99.55 (74.22)	11765 (53.34)	3.17 (5.10)	2199	11.56	5th (2H) Gear			201 (93.6)	54 (12.2)	61 (16.1)	28.60 (96.58)
102.24 (76.24)	9214 (40.98)	4.16 (6.70)	2200	7.96	6th (3H) Gear			202 (94.2)	54 (12.2)	61 (16.1)	28.60 (96.58)
104.66 (78.04)	9058 (40.29)	4.33 (6.97)	2201	7.74	7th (4L) Gear			201 (93.6)	54 (12.2)	60 (15.6)	28.60 (96.58)
107.00 (79.79)	7871 (35.01)	5.10 (8.20)	2200	6.99	8th (5L) Gear			200 (93.3)	53 (11.7)	59 (15.0)	28.59 (96.54)
105.17 (78.43)	6915 (30.76)	5.70 (9.18)	2200	5.55	9th (4H) Gear			200 (93.1)	53 (11.7)	59 (15.0)	28.60 (96.58)
106.98 (79.78)	6008 (26.72)	6.88 (10.73)	2202	4.61	10th (5H) Gear			201 (93.6)	53 (11.7)	59 (15.0)	28.59 (96.54)
107.24 (79.97)	4968 (22.10)	8.09 (13.03)	2201	3.73	11th (6L) Gear			200 (93.3)	53 (11.7)	59 (15.0)	28.59 (96.54)

Department of Agricultural Engineering

Dates of Test: April 25 to May 12, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8402 **Fuel weight** 6.996 lbs/gal *(0.838 kg/l)* **Oil SAE 30 API service classification** SE, SF, CC, CD **To motor** 4.257 gal *(16.115 l)* **Drained from motor** 3.956 gal *(14.975 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 44.0 hours.

ENGINE: **Make** Ford Diesel **Type** six cylinder vertical with turbocharger **Serial No.** °U752866° **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 401 cu in *(6572 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan.

CHASSIS: **Type** standard with duals **Serial No.** °C713505° **Tread width** rear 60" *(1524 mm)* to 120" *(3048 mm)* front 60" *(1524 mm)* to 84" *(2134 mm)* **Wheel base** 109.7" *(2786 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.5" *(745 mm)* Vertical distance above roadway 42.8" *(1087 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.9 *(3.0)* second 2.4 *(3.9)* third 2.9 *(4.6)* fourth 3.6 *(5.8)* fifth 3.7 *(5.9)* sixth 4.7 *(7.5)* seventh 4.8 *(7.8)* eighth 5.6 *(9.0)* ninth 6.2 *(10.0)* tenth 7.2 *(11.6)* eleventh 8.7 *(13.9)* twelfth 10.9 *(17.6)* thirteenth 11.1 *(17.9)* fourteenth 14.0 *(22.6)* fifteenth 14.6 *(23.4)* sixteenth 18.7 *(30.1)* reverse 2.0 *(3.2)*, 2.6 *(4.2)*, 6.1 *(9.7)*, 7.8 *(12.5)* **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 159.6" *(4.05 m)* left 159.6" *(4.05 m)* (on concrete surface without brake) right 174" *(4.42 m)* left 174" *(4.42 m)* **Turning space diameter** (on

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Coolant med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
107.52 (80.17)	7772 (34.57)	5.19 (8.35)	2199	3.75	7.719 (29.218)	0.502 (0.306)	13.95 (2.744)	200 (93.3)	60 (15.3)	68 (20.0)	28.82 (97.30)
Maximum Power in Selected Gears											
93.32 (69.59)	14236 (63.32)	2.46 (3.96)	2288	14.64	3rd (2L) Gear			200 (93.1)	54 (12.2)	59 (15.0)	28.75 (97.08)
104.94 (78.25)	12094 (53.79)	3.25 (5.24)	2201	6.76	4th (3L) Gear			198 (92.2)	54 (12.2)	60 (15.6)	28.77 (97.15)
104.57 (77.98)	11770 (52.36)	3.33 (5.36)	2197	6.31	5th (2H) Gear			200 (93.1)	54 (12.2)	60 (15.6)	28.78 (97.19)
106.27 (79.24)	9316 (41.44)	4.28 (6.88)	2199	4.62	6th (3H) Gear			201 (93.6)	55 (12.8)	61 (16.1)	28.79 (97.22)
108.20 (80.68)	9114 (40.54)	4.45 (7.16)	2201	4.47	7th (4L) Gear			201 (93.6)	55 (12.8)	61 (16.1)	28.80 (97.25)
110.02 (82.04)	7949 (35.36)	5.19 (8.35)	2199	3.75	8th (5L) Gear			200 (93.1)	58 (14.4)	65 (18.3)	28.81 (97.29)
107.11 (79.87)	6841 (30.87)	5.79 (9.31)	2200	3.27	9th (4H) Gear			200 (93.1)	56 (13.3)	62 (16.7)	28.80 (97.25)
108.65 (81.00)	6049 (26.91)	6.75 (10.84)	2199	2.87	10th (5H) Gear			199 (92.8)	57 (13.9)	64 (17.8)	28.80 (97.25)
108.44 (80.86)	5002 (22.25)	8.13 (13.08)	2199	2.38	11th (6L) Gear			200 (93.1)	58 (14.4)	65 (18.3)	28.80 (97.25)

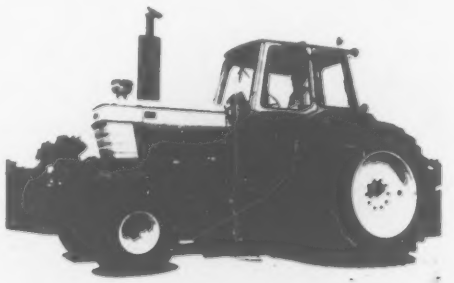
TIRES, BALLAST AND WEIGHT		Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast	Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; 18 (125)	Four 18.4-38; 8; 18 (125)	Four 18.4R38; 8; 18 (125)	Four 18.4R38; 8; 18 (125)
Ballast	—Liquid (each inner)	572 lb (260 kg)	None	660 lb (212 kg)	None
	—Cast Iron (each inner)	710 lb (322 kg)	None	750 lb (331 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 8; 32 (220)	Two 11.00-16; 8; 32 (220)
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	95 lb (43 kg)	None	82 lb (37 kg)	None
Height of Drawbar		22 in (560 mm)	22 in (560 mm)	22 in (560 mm)	22 in (560 mm)
Basic Weight with Operator	—Rear	12325 lb (5591 kg)	9780 lb (4427 kg)	12515 lb (5586 kg)	9890 lb (4500 kg)
	—Front	3685 lb (1671 kg)	3685 lb (1585 kg)	3660 lb (1660 kg)	3685 lb (1305 kg)
	—Total	16010 lb (7262 kg)	13235 lb (6012 kg)	15975 lb (7246 kg)	13415 lb (6085 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 191°F *(88.1°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1515**, June 21, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Ford TW-15 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

LUGGING ABILITY IN 8th (SL) GEAR

Crankshaft Speed rpm	2000	1977	1737	1542	1316	1000
Pull—lbs (kg)	7871 (35.66)	8804 (38.79)	9210 (41.28)	9492 (42.30)	9837 (41.48)	8054 (37.00)
Increase in Pull %	0	10	17	20	17	5
Power—Hp (kW)	107.00 (79.70)	106.70 (78.14)	98.40 (73.45)	88.73 (66.17)	73.92 (55.13)	53.71 (41.34)
Speed—Mph (km/h)	3.10 (4.99)	4.34 (7.31)	4.01 (6.45)	3.51 (5.65)	3.00 (4.83)	2.53 (4.07)
Slip %	6.89	7.07	7.07	7.96	7.07	0.77

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	70.5	70.0
75% of Pull at Maximum Power—Ten Hours		70.0
50% of Pull at Maximum Power—Two Hours		70.0
50% of Pull at Reduced Engine Speed—Two Hours		77.0
Bystander in 10th (SH) gear		67.5

concrete surface with brake applied) right 324° *(8.23 m)* left 324° *(8.23 m)* (on concrete surface without brake) right 360° *(9.14 m)* left 360° *(9.14 m)* **Power take-off** 540 rpm at 1875 engine rpm and 1000 rpm at 1918 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

NEBRASKA TRACTOR TEST 1536—FORD TW-15 FWD DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO speed—1147 rpm)								
121.25 (90.42)	2200	7.635 (28.894)	0.459 (0.267)	15.89 (3.130)	205 (96.2)	68 (19.9)	75 (23.9)	28.81 (97.29)
Standard Power Take-off Speed (1000 rpm)—One Hour								
115.58 (86.19)	1910	6.817 (25.803)	0.411 (0.250)	16.95 (3.340)	204 (95.6)	63 (17.1)	75 (24.1)	28.83 (97.35)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
108.97 (81.26)	2327	7.346 (27.800)	0.470 (0.286)	14.83 (2.932)	200 (93.3)	64 (17.8)	77 (25.0)	....
0.00 (0.00)	2462	2.475 (9.362)	....	....	184 (84.4)	65 (18.1)	76 (24.2)	....
56.13 (41.86)	2394	4.925 (18.642)	0.612 (0.372)	11.40 (2.245)	190 (87.8)	65 (17.2)	76 (24.2)	....
122.10 (91.09)	2200	7.675 (29.045)	0.438 (0.267)	15.91 (3.135)	200 (96.1)	64 (17.8)	76 (24.2)	....
28.60 (21.17)	2421	3.647 (13.800)	0.896 (0.543)	7.79 (1.534)	186 (85.5)	65 (17.2)	74 (23.1)	....
83.00 (61.93)	2386	6.120 (23.168)	0.514 (0.313)	13.57 (2.674)	198 (90.6)	65 (17.2)	76 (24.2)	....
Av 86.65 Av (49.55)	2381	5.984 (20.309)	0.585 (0.343)	12.39 (2.440)	195 (89.6)	64 (17.5)	75 (24.1)	28.84 (97.38)

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp °F (°C) Coolant mud	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (SL) Gear											
105.76 (78.87)	7614 (33.87)	5.21 (8.38)	2200	4.60	7.577 (28.682)	0.560 (0.304)	13.96 (2.750)	205 (96.7)	55 (12.8)	62 (16.7)	29.17 (98.69)
75% of Pull at Maximum Power—Ten Hours 8th (SL) Gear											
85.75 (63.95)	5690 (25.31)	5.65 (9.09)	2354	3.06	6.780 (25.663)	0.551 (0.333)	12.65 (2.492)	197 (91.5)	66 (18.6)	72 (21.9)	29.00 (97.95)
50% of Pull at Maximum Power—Two Hours 8th (SL) Gear											
56.50 (43.69)	5794 (16.88)	5.79 (9.32)	2385	1.87	5.484 (20.759)	0.653 (0.397)	10.66 (2.105)	194 (89.7)	72 (22.2)	90 (32.2)	28.71 (96.95)
50% of Pull at Reduced Engine Speed—Two Hours 11th (SL) Gear											
56.50 (43.69)	5795 (16.87)	5.79 (9.32)	1543	1.91	4.079 (15.440)	0.466 (0.295)	14.36 (2.830)	191 (88.3)	73 (22.5)	92 (33.3)	28.71 (96.95)
MAXIMUM POWER IN SELECTED GEARS											
68.72 (66.16)	19030 (70.90)	2.69 (3.36)	2314	14.60	2nd (1H) Gear			198 (92.2)	56 (13.3)	60 (15.6)	29.09 (98.23)
98.27 (71.30)	15041 (66.90)	3.45 (5.94)	2200	12.53	3rd (2L) Gear			200 (93.1)	56 (13.3)	60 (15.6)	29.15 (98.44)
103.14 (76.91)	11980 (52.97)	3.25 (5.23)	2200	7.77	6th (3L) Gear			202 (94.2)	54 (12.2)	63 (17.2)	29.20 (98.60)
101.53 (75.71)	11417 (50.78)	3.39 (5.37)	2200	7.25	5th (2H) Gear			203 (95.0)	54 (12.2)	63 (17.2)	29.20 (98.60)
102.36 (76.33)	8981 (39.81)	4.29 (6.90)	2200	5.36	6th (3H) Gear			203 (95.0)	54 (12.2)	62 (16.7)	29.20 (98.60)
105.86 (78.94)	8018 (39.67)	4.45 (7.16)	2198	5.36	7th (4L) Gear			202 (94.2)	54 (12.2)	62 (16.7)	29.21 (98.64)
107.35 (80.05)	7733 (34.40)	5.21 (8.38)	2200	4.55	8th (5L) Gear			202 (94.2)	55 (11.7)	62 (16.7)	29.25 (98.71)
101.50 (75.56)	6027 (29.03)	5.82 (9.37)	2199	3.50	9th (4H) Gear			203 (94.7)	56 (13.3)	65 (18.9)	29.20 (98.60)
103.98 (77.46)	5743 (25.54)	6.78 (10.92)	2200	3.11	10th (5H) Gear			202 (94.4)	55 (12.8)	64 (17.8)	29.20 (98.60)
105.90 (77.51)	4702 (21.10)	8.19 (13.13)	2199	2.79	11th (6L) Gear			202 (94.2)	55 (12.8)	64 (17.8)	29.20 (98.60)

Department of Agricultural Engineering

Dates of Test: September 10 - 18, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F (15/15°C)** 0.8577 **Fuel weight** 6.975 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE, SF, CC, CD **To motor** 3.980 gal *(15.066 l)* **Drained from motor** 3.600 gal *(13.626 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 45.5 hours.

ENGINE: Make Ford Diesel **Type** six cylinder vertical with turbocharger **Serial No.** °U754974° **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 401 cu in *(6572 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil, **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan.

CHASSIS: Type front wheel assist with duals **Serial No.** °C715506° **Tread width** rear 60" *(1524 mm)* to 120" *(3048 mm)* front 65.2" *(1656 mm)* to 84.4" *(2144 mm)* **Wheel base** 105" *(2667 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.8" *(808 mm)* Vertical distance above roadway 42.8" *(1087 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial-(2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 1.9 *(3.0)* second 2.4 *(3.9)* third 2.9 *(4.6)* fourth 3.6 *(5.8)* fifth 3.7 *(5.9)* sixth 4.7 *(7.5)* seventh 4.8 *(7.8)* eighth 5.6 *(9.0)* ninth 6.2 *(10.0)* tenth 7.2 *(11.6)* eleventh 8.7 *(13.9)* twelfth 10.9 *(17.6)* thirteenth 11.1 *(17.9)* fourteenth 14.0 *(22.6)* fifteenth 14.6 *(23.4)* sixteenth 18.7 *(30.1)* reverse 2.0 *(3.2)*, 2.6 *(4.2)*, 6.1 *(9.7)*, 7.8 *(12.5)* **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 164" *(4.17 m)* left 164" *(4.17 m)* (on concrete surface without brake) right 182" *(4.62 m)* left 182" *(4.62 m)* **Turning space diameter** (on concrete surface with brake applied) right 346" *(8.79 m)* left 346" *(8.79 m)* (on concrete surface without brake) right 382" *(9.69 m)* left 382" *(9.69 m)* **Power take-off** 540 rpm at 1873 engine rpm and 1000 rpm at 1919 engine rpm **Unladen tractor mass** 12515 lb *(5677 kg)*.

LUGGING ABILITY IN 8th (5L) GEAR

Crankshaft Speed rpm	2200	1977	1750	1545	1318	1098
Pull—lbs (kN)	7733 (34.40)	8604 (37.38)	9006 (40.06)	9489 (42.20)	9181 (40.71)	8338 (37.09)
Increase in Pull %	0	9	16	23	18	8
Power—Hp (kW)	107.35 (80.05)	104.57 (77.83)	99.07 (73.86)	91.56 (68.13)	75.55 (56.31)	57.27 (42.70)
Speed—Mph (km/h)	5.21 (8.38)	4.66 (7.50)	4.15 (6.64)	3.61 (5.81)	3.09 (4.97)	2.58 (4.14)
Slip %	4.55	5.05	5.36	5.65	5.49	4.71

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	79.5	79.0
75% of Pull at Maximum Power—Ten Hours	80.5	
50% of Pull at Maximum Power—Two Hours	80.5	
50% of Pull at Reduced Engine Speed—Two Hours	77.5	
Bystander in 10th (8H) gear		85.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp °F (°C) Coolant mud	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (SL) Gear											
105.15 (76.99)	7507 (33.79)	5.00 (8.19)	2200	0.65	7.513 (28.444)	0.508 (0.309)	13.73 (2.705)	203 (95.0)	55 (13.0)	64 (17.9)	29.21 (98.62)
MAXIMUM POWER IN SELECTED GEARS											
81.35 (60.64)	12048 (53.59)	2.53 (4.07)	2396	14.73	3rd (2L) Gear			196 (90.8)	56 (13.3)	60 (15.6)	29.12 (98.33)
104.19 (77.70)	7672 (34.13)	5.00 (8.20)	2190	0.61	8th (5L) Gear			203 (94.7)	55 (13.0)	63 (17.2)	29.20 (98.60)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-30, 8, 18 (125)	Four 18.4-30, 8, 18 (125)
Ballast	—Liquid (each)	None	None
	—Cast Equip (each)	50 lb (24 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 14.9-30, 6, 18 (125)	Two 14.9-30, 6, 18 (125)
Ballast	—Liquid (each)	450 lb (195 kg)	None
	—Cast Iron (each)	600 lb (281 kg)	None
Height of Drawbar		22 in (560 mm)	22 in (560 mm)
Static Weight with Operator	—Rear	10310 lb (4677 kg)	10100 lb (4581 kg)
	—Front	6870 lb (3089 kg)	4870 lb (1937 kg)
	—Total	17680 lb (7766 kg)	14970 lb (6518 kg)

THREE POINT HITCH PERFORMANCE

	Maximum Lift Capacity		Lift Capacity for Transport
Observed Maximum Pressure psi (kpa) Location	2375 remote	17750	
Hydraulic oil temperature °F (°C) Location	152 sump	67	
QUICK ATTACH	no		
CATEGORY	II		*not measured
LOAD lbs (kg)	7150	3243	
TIME sec	2.23		
HITCH POINT MOVEMENT in (mm)			
Lowest position	8.0	203	
Top of timed range	32.1	816	
Highest position	36.0	914	
LOAD CG MOVEMENT in (mm)			
Lowest position	8.3	211	
Top of timed range	31.9	810	
Highest position	36.4	926	

*Implement load capacity for transport purposes not specified by manufacturer

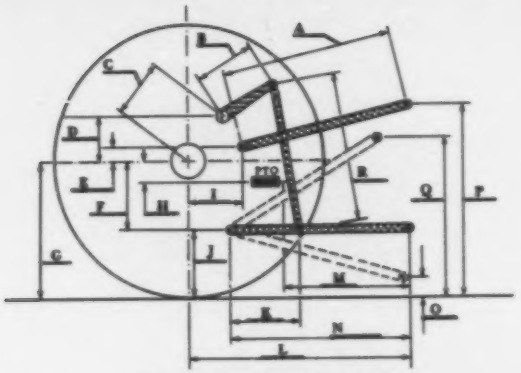
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 201°F (93.9°C). Ten gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1536, November 16,1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	29.5	749
B	15.0	381
C	16.2	412
D	15.5	394
E	8.0	203
F	10.5	267
G	33.0	838
H	2.4	62
I	17.0	432
J	22.5	572
K	18.9	481
L	45.3	1150
M	23.6	600
N	36.3	921
O	8.0	203
P	41.5	1054
Q	37.1	943
R	32.5	826

Ford TW-15 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1516—FORD TW-25 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (L/h)	lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1547 rpm)								
140.80 (104.97)	2200	8.973 (33.962)	0.448 (0.271)	15.68 (5.080)	202 (94.4)	64 (17.6)	75 (24.1)	28.52 (96.45)
Standard Power Take-off Speed (1000 rpm)—One Hour								
130.70 (101.59)	1918	8.147 (30.837)	0.420 (0.255)	16.04 (5.291)	198 (92.4)	64 (18.0)	74 (23.4)	28.52 (96.39)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
136.04 (94.34)	2203	8.570 (32.440)	0.473 (0.288)	14.79 (5.013)	200 (93.3)	68 (20.0)	77 (25.3)	— —
0.00 (0.00)	2401	2.020 (0.015)	— —	— —	195 (87.4)	69 (20.5)	75 (23.6)	— —
68.34 (47.72)	2404	5.307 (20.045)	0.388 (0.339)	11.86 (2.337)	186 (85.6)	65 (18.1)	75 (23.6)	— —
141.27 (105.31)	2200	8.980 (34.000)	0.448 (0.271)	15.70 (5.000)	201 (93.6)	65 (18.5)	75 (23.9)	— —
32.86 (24.50)	2420	4.040 (15.295)	0.860 (0.525)	8.15 (1.602)	183 (83.9)	65 (18.3)	74 (23.3)	— —
98.55 (73.48)	2360	7.051 (26.687)	0.511 (0.311)	13.69 (2.697)	191 (88.1)	66 (19.0)	75 (23.9)	— —
Av 77.14 (57.52)	2304	6.152 (23.282)	0.506 (0.308)	12.30 (2.478)	190 (88.0)	65 (18.4)	75 (23.8)	28.59 (96.74)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (L/h)	lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temp. °F (°C) Cooling med.	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
124.84 (93.09)	6667 (29.62)	3.35 (5.44)	2190	6.59	8.380 (31.722)	0.510 (0.309)	13.30 (2.703)	200 (94.3)	65 (18.4)	70 (21.0)	28.66 (96.83)
70% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
100.30 (77.05)	4704 (20.92)	5.71 (9.19)	2366	4.39	7.594 (28.654)	0.557 (0.337)	13.02 (2.762)	198 (92.1)	67 (19.4)	70 (21.2)	28.58 (97.02)
80% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
71.22 (53.11)	6525 (29.02)	3.50 (5.63)	2360	2.79	6.360 (24.085)	0.533 (0.380)	11.39 (2.395)	192 (88.6)	66 (18.8)	69 (20.4)	28.64 (96.96)
80% of Pull at Reduced Engine Speed—Two Hours 10th (6L) Gear											
71.98 (53.15)	6525 (29.02)	5.91 (9.51)	1545	2.80	4.732 (17.912)	0.604 (0.380)	15.06 (3.967)	191 (88.3)	68 (20.0)	70 (21.4)	28.64 (96.96)
MAXIMUM POWER IN SELECTED GEARS											
102.98 (76.75)	14871 (66.15)	2.60 (4.18)	2326	14.97	3rd (2L) Gear			198 (92.4)	68 (20.0)	55 (12.8)	28.10 (95.27)
118.27 (88.20)	13980 (62.20)	3.19 (5.14)	2299	11.96	4th (3L) Gear			201 (93.9)	68 (20.0)	55 (12.8)	28.10 (95.27)
118.39 (88.21)	13016 (57.90)	3.39 (5.45)	2301	11.94	5th (2H) Gear			202 (94.2)	68 (20.0)	55 (12.8)	28.10 (95.27)
122.33 (91.22)	10880 (47.94)	4.39 (6.91)	2300	7.88	6th (3H) Gear			203 (95.0)	68 (20.0)	56 (13.3)	28.10 (95.27)
124.02 (92.48)	10466 (46.50)	4.67 (7.19)	2301	7.50	7th (4L) Gear			204 (95.3)	68 (20.0)	56 (13.3)	28.11 (95.30)
126.75 (94.50)	9965 (44.25)	5.25 (8.44)	2190	6.06	8th (5L) Gear			204 (95.3)	68 (20.0)	55 (13.0)	28.03 (95.03)
124.93 (93.16)	7970 (35.45)	5.86 (9.46)	2190	5.62	9th (6H) Gear			203 (95.0)	68 (20.0)	56 (13.3)	28.11 (95.30)
125.75 (93.77)	6809 (30.51)	6.80 (11.06)	2190	4.53	10th (7H) Gear			205 (96.2)	68 (20.0)	57 (13.9)	28.11 (95.30)
125.79 (93.78)	5680 (25.12)	8.33 (13.41)	2190	3.46	11th (8L) Gear			203 (95.3)	68 (20.0)	57 (13.9)	28.11 (95.30)

Department of Agricultural Engineering

Dates of Test: April 25 to May 15, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIRE: Fuel No. 2 Diesel Cetane No. 46.0 (tests taken from oil company's inspection data) Specific gravity converted to 60° 60° (15°/15°) 0.8401 Fuel weight 6.995 lbs/gal (0.838 kg/l) Oil SAE 30 API service classifications SE, SF, CC, CD To restore 4.570 gal (17.299 l) Drained from motor 5.999 gal (23.139 l) Transmission and final drive lubricant Ford 134 fluid Total time engine was operated 41.0 hours.

ENGINE: Make Ford Diesel Type six cylinder vertical with turbocharger Serial No. "6729948" Crankshaft lengthwise Rated rpm 2200 Bore and stroke 4.4" = 4.4" (112 mm = 112 mm) Compression ratio 15.6 to 1 Displacement 401 cu in (6572 cc) Starting system 12 volt Lubrication pressure Air cleaner two paper elements and aspirator Oil filter one full flow cartridge Oil cooler heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil Fuel filter one paper element and sediment bowl Muffler vertical Cooling medium temperature control two thermostats and variable speed fan.

CHASSIS: Type mounted with dash Serial No. "C713507" Tread width rear 64" (1626 mm) to 120" (3048 mm) front 68" (1660 mm) to 97" (2210 mm) Wheel base 108.7" (2761 mm) Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 32.5" (825 mm) Vertical distance above roadway 44.8" (1139 mm) Horizontal distance from center of rear wheel tread 0.4" (10 mm) to the left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (2) range operator controlled powershift Advertised speeds mph (km/h) first 1.8 (2.9) second 2.3 (3.7) third 2.8 (4.5) fourth 3.5 (5.6) fifth 5.6 (5.7) sixth 4.5 (7.2) seventh 4.7 (7.5) eighth 5.4 (8.7) ninth 6.9 (9.4) tenth 7.0 (11.2) eleventh 8.4 (13.4) twelfth 10.5 (16.9) thirteenth 10.7 (17.3) fourteenth 15.3 (21.8) fifteenth 14.8 (23.6) sixteenth 18.9 (29.6) reverse 1.9 (3.1), 2.5 (4.0), 5.8 (9.4), 7.5 (12.1) Clutch single dry disc operated by foot pedal Brakes single wet disc hydraulically-operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 150.0" (4.05 m) left 150.0" (4.05 m) (on concrete surface without brake) right 174" (4.42 m) left 174" (4.42 m) Turning space diameter (on

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (L/h)	lb/hp-hr (kg/kW-h)	Hp-hr/gal (kW-h/L)	Temp. °F (°C) Cooling med.	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
138.01 (99.59)	6750 (30.02)	5.04 (8.11)	2200	5.17	8.980 (33.984)	0.494 (0.301)	14.16 (2.709)	207 (96.9)	60 (15.3)	72 (21.9)	28.17 (95.11)
MAXIMUM POWER IN SELECTED GEARS											
107.77 (80.33)	13824 (61.49)	2.30 (3.70)	2250	14.00	3rd (2L) Gear			198 (92.2)	56 (13.3)	64 (17.8)	29.24 (98.74)
124.08 (92.52)	12757 (56.74)	3.04 (4.89)	2197	6.14	4th (3L) Gear			203 (94.7)	56 (13.3)	65 (18.3)	29.23 (98.71)
124.16 (92.59)	12068 (53.67)	3.20 (5.15)	2200	5.81	5th (2H) Gear			204 (95.3)	56 (13.3)	66 (18.9)	29.23 (98.71)
125.02 (93.23)	11667 (51.89)	3.40 (5.47)	2199	5.06	6th (3H) Gear			205 (95.8)	56 (13.3)	66 (18.9)	29.22 (98.67)
127.31 (94.93)	10965 (48.77)	3.67 (5.91)	2200	5.00	7th (4L) Gear			207 (96.9)	56 (13.3)	67 (19.4)	29.21 (98.64)
128.81 (96.06)	9905 (44.05)	5.04 (8.11)	2198	3.10	8th (5L) Gear			206 (96.4)	58 (14.4)	70 (21.1)	29.20 (98.60)
128.55 (95.86)	7810 (34.74)	6.88 (11.07)	2200	2.71	9th (4H) Gear			206 (96.4)	56 (13.3)	68 (20.0)	29.21 (98.64)
127.49 (95.07)	6794 (30.22)	7.86 (12.65)	2200	2.50	10th (5H) Gear			205 (96.1)	56 (13.3)	68 (20.0)	29.20 (98.60)
126.59 (94.37)	5894 (26.21)	9.01 (14.50)	2201	2.02	11th (6L) Gear			206 (96.4)	57 (13.9)	68 (20.0)	29.20 (98.60)

TIRES, BALLAST AND WEIGHT		Bias Ply Tires: With Ballast	Bias Ply Tires: Without Ballast	Radial Ply Tires: With Ballast	Radial Ply Tires: Without Ballast
Rear Tires	—Size, rate, ply & psi (kPa)	Four 20.8-38; 10; 16 (110)	Four 20.8-38; 10; 16 (110)	Four 20.8R38; 10; 16 (110)	Four 20.8R38; 10; 16 (110)
Ballast	—Liquid (each tire)	680 lb (309 kg)	None	672 lb (305 kg)	None
	—Cast (rim, fluid, misc)	300 lb (138 kg)	None	None	None
Front Tires	—Size, rate, ply & psi (kPa)	Two 14L-16.1SL; 8; 36 (250)	Two 14L-16.1SL; 8; 36 (250)	Two 14L-16.1SL; 8; 36 (250)	Two 14L-16.1SL; 8; 36 (250)
Ballast	—Liquid (each)	None	None	None	None
	—Cast (rim, fluid)	75 lb (33 kg)	None	65 lb (29 kg)	None
Height of Drawbar		21 in (533 mm)	21 in (533 mm)	21 in (533 mm)	21 in (533 mm)
Static Weight with Operator—Rear		12880 lb (6033 kg)	10915 lb (4951 kg)	12430 lb (5634 kg)	11075 lb (5024 kg)
—Front		4665 lb (2116 kg)	4520 lb (2050 kg)	4800 lb (2189 kg)	4520 lb (2050 kg)
—Total		17550 lb (8149 kg)	15435 lb (7001 kg)	17070 lb (7743 kg)	15595 lb (7074 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technical equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 185°F (83.9°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1516, June 21, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford TW-25 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

LUGGING ABILITY IN 8th (SL) GEAR

Crankshaft Speed rpm	2199	1981	1754	1544	1308	1096
Pull—lbs (kN)	9045 (40.23)	9699 (43.47)	10543 (46.36)	10239 (45.89)	9819 (44.01)	8489 (38.05)
Increase in Pull %	0	7	14	13	9	−6
Power—Hp (kW)	126.73 (94.50)	121.84 (90.71)	114.12 (85.10)	99.52 (74.21)	81.15 (60.51)	59.46 (44.34)
Speed—Mph (km/h)	5.25 (8.46)	4.70 (7.57)	4.14 (6.66)	3.64 (5.87)	3.10 (4.99)	2.65 (4.25)
Slip %	6.06	6.84	7.45	7.50	6.99	6.06

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	80.0	81.0
75% of Pull at Maximum Power—Ten Hours		82.5
50% of Pull at Maximum Power—Two Hours		82.5
50% of Pull at Reduced Engine Speed—Two Hours		78.5
Bystander in 10th (8H) gear		89.5

concrete surface with brake applied) right 324" *(8.23 m)* left 324" *(8.23 m)* (on concrete surface without brake) right 360" *(9.14 m)* left 360" *(9.14 m)* **Power take-off** 540 rpm at 1875 engine rpm and 1000 rpm at 1918 engine rpm.

REPAIRS and ADJUSTMENTS: During preliminary PTO tests, the missing foam rubber seal strip on the right side of the radiator was installed.

NEBRASKA TRACTOR TEST 1517—FORD TW-35 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (g/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1147 rpm)								
170.50 (127.08)	2200	10.335 (39.119)	0.425 (0.258)	10.48 (5.244)	191 (88.3)	53 (23.8)	75 (23.9)	28.59 (96.54)
Standard Power Take-off Speed (1000 rpm)—One Hour								
166.67 (124.28)	1919	9.575 (36.243)	0.402 (0.244)	17.41 (9.429)	190 (87.8)	56 (13.5)	75 (23.7)	28.66 (96.79)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
148.59 (110.65)	2255	9.247 (35.001)	0.456 (0.283)	10.08 (5.163)	186 (85.6)	58 (14.2)	75 (23.9)	....
0.00 (0.00)	2388	2.560 (9.692)	....	....	181 (82.8)	57 (13.6)	74 (23.1)	....
76.06 (57.17)	2331	5.854 (22.160)	0.534 (0.325)	15.10 (2.580)	184 (84.2)	56 (13.3)	74 (23.1)	....
170.72 (127.31)	2200	10.357 (39.206)	0.424 (0.258)	10.48 (5.247)	191 (88.3)	58 (14.6)	76 (24.2)	....
38.79 (28.92)	2357	4.194 (15.877)	0.736 (0.460)	9.25 (1.822)	182 (83.1)	59 (14.7)	76 (24.2)	....
112.80 (84.11)	2206	7.428 (28.118)	0.481 (0.298)	15.18 (2.990)	185 (85.0)	58 (14.4)	74 (23.3)	....
Av *for*	91.33 (68.03)	2300	6.007 (21.009)	0.507 (0.308)	13.81 (2.720)	185 (84.8)	57 (13.8)	75 (23.6)	28.70 (96.92)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (g/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
145.45 (108.45)	10258 (45.62)	5.32 (8.56)	2190	6.15	10.164 (38.476)	0.480 (0.297)	14.91 (2.869)	193 (89.2)	52 (11.1)	57 (13.6)	28.61 (96.39)
75% of Pull at Maximum Power—Ten Hours 8th (5L) Gear											
115.86 (86.39)	7833 (34.84)	5.55 (8.93)	2260	4.68	8.332 (31.539)	0.505 (0.306)	15.91 (2.779)	191 (88.6)	53 (11.9)	58 (14.5)	28.63 (96.67)
50% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
80.26 (59.85)	5223 (23.23)	5.76 (9.27)	2313	3.36	6.590 (24.947)	0.574 (0.349)	12.10 (2.390)	191 (88.3)	51 (10.6)	53 (11.7)	28.95 (97.74)
50% of Pull at Reduced Engine Speed—Two Hours 11th (6L) Gear											
80.26 (59.85)	5221 (23.22)	5.77 (9.28)	1486	3.07	5.504 (20.837)	0.480 (0.292)	14.58 (2.875)	191 (88.3)	52 (11.1)	55 (12.5)	28.89 (97.56)
MAXIMUM POWER IN SELECTED GEARS											
115.93 (86.45)	17054 (75.86)	2.55 (4.10)	2262	14.82		3rd (2L) Gear		192 (88.9)	59 (15.9)	42 (5.6)	29.05 (98.10)
138.16 (103.03)	16226 (72.18)	3.19 (5.14)	2200	12.84		4th (3L) Gear		192 (88.9)	61 (5.0)	44 (6.7)	29.05 (98.10)
138.73 (103.45)	15805 (70.30)	3.29 (5.30)	2200	12.99		5th (2H) Gear		191 (88.3)	63 (6.1)	46 (7.8)	29.05 (98.10)
143.93 (107.33)	12505 (55.61)	4.32 (6.95)	2199	8.29		6th (3H) Gear		195 (90.3)	65 (7.2)	48 (8.9)	29.04 (98.06)
143.16 (106.75)	11904 (52.95)	4.51 (7.26)	2198	7.89		7th (4L) Gear		194 (90.0)	67 (8.3)	52 (11.1)	29.04 (98.06)
147.49 (109.98)	10444 (46.46)	5.30 (8.52)	2198	6.82		8th (5L) Gear		193 (90.3)	69 (10.0)	55 (12.8)	29.01 (97.96)
143.44 (106.96)	9865 (43.32)	5.93 (9.53)	2200	5.88		9th (4H) Gear		194 (90.0)	68 (8.9)	53 (11.7)	29.04 (98.06)
145.82 (108.74)	7878 (35.04)	6.94 (11.17)	2200	4.96		10th (5H) Gear		192 (88.9)	68 (8.9)	54 (12.2)	29.03 (98.03)
145.80 (108.73)	6499 (28.91)	8.41 (13.54)	2200	3.74		11th (6L) Gear		192 (88.9)	69 (9.4)	55 (12.8)	29.02 (98.00)

Department of Agricultural Engineering

Dates of Test: April 26 to May 8, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8401 **Fuel weight** 6.995 lbs/gal *(0.838 kg/l)* **Oil SAE 30 API service classification SE, SF, CC, CD To motor** 4.307 gal *(16.304 l)* **Drained from motor** 3.653 gal *(13.829 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 45.0 hours.

ENGINE: Make Ford Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *M726721* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" x 4.4" *(112 mm x 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 401 cu in *(6572 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan.

CHASSIS: Type standard with duals **Serial No.** *C713308* **Tread width** rear 64" *(1626 mm)* to 120" *(3048 mm)* front 63" *(1600 mm)* to 87" *(2210 mm)* **Wheel base** 110.5" *(2806 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.9" *(810 mm)* Vertical distance above roadway 43.6" *(1107 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 1.8 *(2.9)* second 2.4 *(3.8)* third 2.8 *(4.5)* fourth 3.5 *(5.7)* fifth 3.6 *(5.8)* sixth 4.6 *(7.4)* seventh 4.7 *(7.6)* eighth 5.5 *(8.8)* ninth 6.1 *(9.8)* tenth 7.1 *(11.4)* eleventh 8.5 *(13.7)* twelfth 10.7 *(17.2)* thirteenth 10.9 *(17.5)* fourteenth 13.7 *(22.1)* fifteenth 14.3 *(22.9)* sixteenth 18.3 *(29.5)* reverse 2.0 *(3.2)*, 2.5 *(4.1)*, 5.9 *(9.5)*, 7.6 *(12.3)* **Clutch** single dry disc operated by foot pedal **Brakes** power assisted, double wet disc operated hydraulically by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 159.6" *(4.05 m)* left 159.6" *(4.05 m)* (on concrete surface without brake) right 174" *(4.42 m)* left 174" *(4.42 m)* **Turning space diameter** (on concrete surface with brake applied) right 324" *(8.23 m)* left 324" *(8.23 m)* (on concrete surface without brake) right 360" *(9.14 m)* left 360" *(9.14 m)* **Power take-off** 1000 rpm at 1919 engine rpm.

LUGGING ABILITY IN 8th (5L) GEAR

Crankshaft Speed rpm	2199	1975	1761	1541	1312	1091
Pull—lbs (kN)	10444 (46.46)	11589 (51.89)	12188 (54.54)	12035 (53.94)	11217 (50.28)	9283 (41.61)
Increase in Pull %	0	9	17	15	7	−11
Power—Hp (kW)	147.49 (109.98)	143.70 (107.16)	135.67 (101.17)	117.50 (87.62)	93.87 (70.00)	65.53 (48.86)
Speed—Mph (km/h)	5.30 (8.52)	4.73 (7.61)	4.13 (6.73)	3.66 (5.89)	3.14 (5.05)	2.65 (4.26)
Slip %	6.62	7.28	7.84	7.69	7.23	5.99

TRACTOR SOUND LEVEL WITH CAB	Radial Ply dB(A)	Bias Ply dB(A)
Maximum Available Power—Two Hours	81.5	82.5
75% of Pull at Maximum Power—Ten Hours		81.0
50% of Pull at Maximum Power—Two Hours		81.0
50% of Pull at Reduced Engine Speed—Two Hours		80.0
Bystander in 16th (8H) gear		91.5

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (g/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
151.54 (113.00)	10241 (45.55)	5.55 (8.93)	2200	2.62	10.100 (38.233)	0.466 (0.284)	15.00 (2.956)	195 (90.3)	44 (6.6)	48 (8.6)	29.07 (98.15)
MAXIMUM POWER IN SELECTED GEARS											
137.32 (102.40)	18615 (82.80)	2.77 (4.45)	2240	7.11		3rd (2L) Gear		195 (89.2)	47 (8.3)	50 (10.0)	28.95 (97.76)
149.31 (111.34)	15945 (70.93)	3.51 (5.65)	2200	4.57		4th (3L) Gear		191 (88.3)	47 (8.3)	50 (10.0)	28.96 (97.79)
149.03 (111.13)	15535 (69.10)	3.60 (5.79)	2199	4.49		5th (2H) Gear		192 (88.6)	47 (8.3)	50 (10.0)	28.97 (97.83)
149.64 (111.59)	12237 (54.43)	4.59 (7.38)	2200	3.25		6th (3H) Gear		194 (90.0)	46 (7.8)	49 (9.4)	28.98 (97.86)
152.09 (113.41)	11970 (53.24)	4.76 (7.67)	2200	3.17		7th (4L) Gear		194 (89.7)	46 (7.8)	49 (9.4)	28.99 (97.89)
154.40 (115.14)	10443 (46.45)	5.54 (8.92)	2199	2.66		8th (5L) Gear		196 (90.8)	46 (7.8)	48 (8.9)	29.00 (97.93)
151.06 (112.65)	9182 (40.84)	6.17 (9.93)	2199	2.40		9th (4H) Gear		196 (89.7)	46 (7.8)	49 (9.4)	29.00 (97.93)
150.52 (112.24)	7867 (34.99)	7.18 (11.55)	2200	1.98		10th (5H) Gear		192 (88.6)	46 (7.8)	48 (8.9)	29.00 (97.93)
151.41 (112.91)	6566 (29.21)	8.65 (13.92)	2199	1.80		11th (6L) Gear		194 (89.7)	45 (7.2)	48 (8.9)	29.00 (97.93)

TIRES, BALLAST AND WEIGHT		Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast	Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 10; 16 (110)	Four 20.8-38; 10; 16 (110)	Four 20.8R38; 10; 16 (110)	Four 20.8R38; 10; 16 (110)
Ballast	—Liquid (each inner)	1415 lb (642 kg)	None	1305 lb (592 kg)	None
	—Cast Iron (each inner)	570 lb (259 kg)	None	600 lb (272 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 14L-16.1SL; 9; 36 (250)	Two 14L-16.1SL; 8; 36 (250)	Two 14L-16.1SL; 8; 36 (250)	Two 14L-16.1SL; 8; 36 (250)
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	80 lb (27 kg)	None	65 lb (29 kg)	None
Height of Drawbar		24.5 in (620 mm)	24.5 in (620 mm)	22.5 in (570 mm)	22.5 in (570 mm)
Basic Weight with Operator	—Rear	15540 lb (7049 kg)	11570 lb (5248 kg)	15540 lb (7049 kg)	11750 lb (5321 kg)
	—Front	4750 lb (2145 kg)	4610 lb (2091 kg)	4740 lb (2150 kg)	4610 lb (2091 kg)
	—Total	20270 lb (9194 kg)	16180 lb (7339 kg)	20280 lb (9199 kg)	16360 lb (7412 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 174°F *(78.9°C)*. Nine gears were chosen between stability limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1517,** July 12, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford TW-35 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1537—FORD TW-35 FWD DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1147 rpm)								
171.12 (127.60)	2200	10.166 (38.479)	0.414 (0.252)	16.83 (3.316)	198 (92.4)	64 (17.7)	75 (24.1)	29.13 (98.38)
Standard Power Take-off Speed (1000 rpm)—One Hour								
162.55 (121.21)	1919	9.249 (35.007)	0.397 (0.241)	17.58 (3.463)	192 (88.7)	65 (18.3)	76 (24.4)	29.13 (98.35)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
154.07 (114.89)	2330	9.521 (36.041)	0.431 (0.262)	16.18 (3.188)	197 (91.7)	66 (18.9)	77 (24.7)	....
0.00 (0.00)	2455	2.481 (9.393)	....	....	175 (79.4)	66 (18.9)	77 (25.0)	....
79.10 (58.98)	2302	5.883 (22.269)	0.519 (0.316)	13.44 (2.649)	182 (83.3)	67 (19.2)	77 (25.0)	....
170.93 (127.46)	2201	10.171 (38.499)	0.415 (0.252)	16.81 (3.311)	200 (93.3)	67 (19.2)	78 (25.6)	....
40.06 (29.87)	2423	4.133 (15.644)	0.720 (0.438)	9.69 (1.909)	182 (83.3)	67 (19.4)	78 (25.3)	....
116.96 (87.22)	2358	7.829 (29.878)	0.455 (0.277)	15.33 (3.020)	187 (86.1)	67 (19.4)	77 (25.0)	....
Av 93.52	2360	6.636	0.495	14.09	187	67	77	29.09
Av (69.74)		(25.121)	(0.301)	(2.776)	(86.2)	(19.2)	(25.1)	(98.23)

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
145.69 (108.64)	10041 (44.66)	5.44 (8.76)	2199	4.96	10.106 (38.256)	0.484 (0.294)	14.42 (2.840)	201 (93.6)	60 (15.3)	70 (20.8)	28.85 (97.42)
75% of Pull at Maximum Power—Ten Hours 8th (5L) Gear											
119.30 (88.96)	7625 (33.92)	5.87 (9.44)	2337	3.59	8.098 (32.927)	0.509 (0.309)	13.71 (2.702)	198 (92.4)	65 (17.2)	75 (24.1)	28.65 (96.76)
50% of Pull at Maximum Power—Two Hours 8th (5L) Gear											
81.06 (60.45)	5048 (22.45)	6.02 (9.69)	2368	2.53	6.730 (25.477)	0.579 (0.352)	12.04 (2.373)	190 (87.8)	65 (18.9)	83 (28.1)	28.99 (97.88)
50% of Pull at Reduced Engine Speed—Two Hours 11th (8L) Gear											
81.06 (60.44)	5048 (22.45)	6.02 (9.69)	1531	2.24	5.605 (21.217)	0.482 (0.293)	14.46 (2.849)	192 (88.9)	69 (20.3)	91 (32.5)	28.95 (97.76)
MAXIMUM POWER IN SELECTED GEARS											
131.17 (97.81)	18825 (83.73)	2.61 (4.21)	2294	14.78	3rd (2L) Gear			196 (91.1)	57 (13.9)	64 (17.8)	28.81 (97.29)
138.87 (103.55)	15400 (68.50)	3.38 (5.44)	2199	8.55	4th (5L) Gear			199 (92.5)	59 (15.0)	65 (18.3)	29.00 (97.93)
138.38 (103.19)	14968 (66.58)	3.47 (5.58)	2199	8.25	5th (2H) Gear			199 (92.5)	60 (15.6)	66 (18.9)	29.00 (97.93)
141.60 (105.59)	11885 (52.86)	4.47 (7.19)	2198	6.00	6th (3H) Gear			200 (93.1)	60 (15.6)	67 (19.4)	29.00 (97.93)
144.30 (107.60)	11638 (51.77)	4.65 (7.48)	2200	5.92	7th (4L) Gear			199 (92.5)	61 (16.1)	69 (20.6)	29.00 (97.93)
147.55 (110.02)	10166 (45.22)	5.44 (8.76)	2199	5.04	8th (5L) Gear			201 (93.9)	60 (15.6)	70 (21.1)	28.85 (97.42)
142.14 (105.99)	8759 (38.96)	6.09 (9.79)	2200	4.22	9th (4H) Gear			199 (92.5)	62 (16.7)	70 (21.1)	29.00 (97.93)
144.01 (107.39)	7609 (33.84)	7.10 (11.42)	2199	3.64	10th (5H) Gear			198 (91.9)	62 (16.7)	72 (22.2)	29.00 (97.93)
143.70 (107.15)	6278 (27.93)	8.58 (13.81)	2199	2.88	11th (5L) Gear			200 (93.1)	62 (16.7)	74 (23.3)	29.00 (97.93)

Department of Agricultural Engineering

Dates of Test: September 12 - 24, 1984

Manufacturer: FORD MOTOR COMPANY, 2500 Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F** *(15/15°C)* 0.8378 **Fuel weight** 6.976 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE, SF, CC, CD **To motor** 4.063 gal *(15.379 l)* **Drained from motor** 3.700 gal *(14.007 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 58.0 hours.

ENGINE: Make Ford Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** °C766277° **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 401 cu in *(6572 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan.

CHASSIS: Type front wheel assist with duals **Serial No.** °C724968° **Tread width** rear 64" *(1626 mm)* to 120" *(3048 mm)* front 70" *(1778 mm)* to 84" *(2134 mm)* **Wheel base** 111" *(2819 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 35.8" *(910 mm)* Vertical distance above roadway 43.6" *(1107 mm)* Horizontal distance from center of rear wheel tread 0.2" *(5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.8 *(2.9)* second 2.4 *(3.8)* third 2.8 *(4.5)* fourth 3.5 *(5.7)* fifth 3.6 *(5.8)* sixth 4.6 *(7.4)* seventh 4.7 *(7.6)* eighth 5.5 *(8.8)* ninth 6.1 *(9.8)* tenth 7.1 *(11.4)* eleventh 8.5 *(13.7)* twelfth 10.7 *(17.2)* thirteenth 10.9 *(17.5)* fourteenth 13.7 *(22.1)* fifteenth 14.3 *(22.9)* sixteenth 18.3 *(29.5)* reverse 2.0 *(3.2)*, 2.5 *(4.1)*, 5.9 *(9.5)*, 7.6 *(12.3)* **Clutch** single dry disc operated by foot pedal **Brakes** power assisted, double wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 198" *(5.03 m)* left 198" *(5.03 m)* (on concrete surface without brake) right 227" *(5.77 m)* left 227" *(5.77 m)* **Turning space diameter** (on concrete surface with brake applied) right 414" *(10.51 m)* left 414" *(10.51 m)* (on concrete surface without brake) right 472" *(12.00 m)* left 472" *(12.00 m)* **Power take-off** 1000 rpm at 1919 engine rpm **Unladen tractor mass** 15100 lb *(6849 kg)*.

LUGGING ABILITY IN 8th (5L) GEAR

Crankshaft Speed rpm	2199	1904	1754	1538	1315	1092
Pull—lbs (kN)	10166 (45.22)	10870 (48.35)	11555 (51.40)	11607 (51.63)	10608 (47.19)	9131 (40.62)
Increase in Pull %	0	7	14	14	4	−10
Power—Hp (kW)	147.55 (110.02)	141.54 (105.53)	132.51 (98.81)	116.59 (86.94)	91.76 (68.42)	66.14 (49.32)
Speed—Mph (km/h)	5.44 (8.76)	4.88 (7.86)	4.30 (6.92)	3.77 (6.06)	3.24 (5.22)	2.72 (4.37)
Slip %	5.04	5.52	5.84	6.00	5.36	4.38

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	82.0	81.5
75% of Pull at Maximum Power—Ten Hours	81.5	
50% of Pull at Maximum Power—Two Hours	81.5	
50% of Pull at Reduced Engine Speed—Two Hours	79.0	
Bystander in 16th (8H) gear		88.5

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5L) Gear											
140.64 (104.80)	10079 (44.83)	5.25 (8.42)	2200	8.23	10.128 (38.337)	0.502 (0.306)	13.99 (2.736)	206 (96.6)	63 (17.2)	78 (25.3)	28.85 (97.42)
MAXIMUM POWER IN SELECTED GEARS											
125.15 (93.33)	13887 (61.77)	3.38 (5.44)	2314	14.81	5th (2H) Gear			195 (90.3)	58 (14.4)	65 (18.3)	28.83 (97.35)
143.24 (106.81)	10189 (45.32)	5.27 (8.48)	2199	7.82	8th (5L) Gear			203 (94.7)	63 (17.2)	75 (23.9)	29.00 (97.93)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 10; 16 (110)	Four 20.8-38; 10; 10 (110)
Ballast	—Liquid (each inner)	373 lb (170 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 10 (125)
Ballast	—Liquid (each)	440 lb (200 kg)	None
	—Cast Iron (each)	750 lb (340 kg)	None
Height of Drawbar		24.5 in (620 mm)	24.5 in (620 mm)
Static Weight with Operator	—Rear	12490 lb (5625 kg)	11660 lb (5283 kg)
	—Front	7870 lb (3570 kg)	5490 lb (2490 kg)
	—Total	20270 lb (9195 kg)	17140 lb (7773 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa)	2550	17580
Location	remote	
Hydraulic oil temperature °F (°C)	104	40
Location	sump	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	no		
CATEGORY	II		*not measured
LOAD lbs (kg)	7158	3247	
TIME sec	2.04		
HITCH POINT MOVEMENT in (mm)			
Lowest position	9.1	232	
Top of timed range	33.1	841	
Highest position	36.6	930	
LOAD CG MOVEMENT in (mm)			
Lowest position	9.3	235	
Top of timed range	32.8	832	
Highest position	36.6	930	

*Implement load capacity for transport purposes not specified by manufacturer.

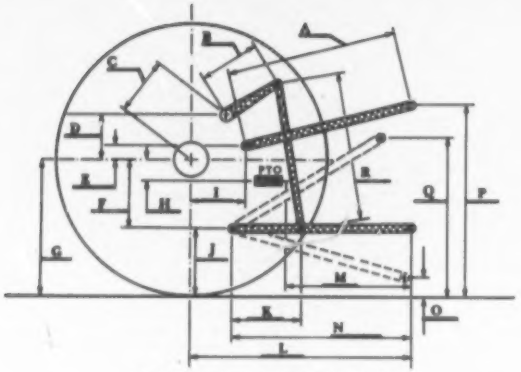
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 183°F *(84.0°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1537, November 26, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	28.9	734
B	15.0	381
C	16.2	412
D	15.5	394
E	8.0	203
F	10.5	267
G	33.9	861
H	2.4	62
I	17.0	432
J	23.4	594
K	18.9	481
L	45.3	1150
M	23.6	600
N	36.3	921
O	8.0	203
P	42.4	1077
Q	37.0	940
R	33.1	841

Ford TW-35 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1519 — MASSEY FERGUSON 240 DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—604 rpm)								
34.77 (25.93)	2000	2.175 (8.226)	0.438 (0.266)	16.00 (3.152)	186 (85.4)	61 (16.0)	75 (24.0)	29.17 (98.50)
Standard Power Take-off Speed (540 rpm) — One hour)								
31.89 (23.78)	1788	1.981 (7.496)	0.435 (0.265)	16.10 (3.172)	186 (85.6)	64 (17.5)	75 (24.0)	29.16 (98.45)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
30.27 (22.57)	2050	1.928 (7.297)	0.466 (0.271)	15.70 (3.095)	185 (83.9)	65 (18.1)	75 (23.6)	....
0.00 (0.00)	2155	0.630 (2.384)	....	....	177 (80.3)	65 (18.3)	76 (24.2)	....
15.46 (11.53)	2095	1.225 (4.638)	0.555 (0.338)	12.62 (2.486)	179 (81.7)	66 (18.6)	76 (24.4)	....
34.36 (25.62)	2000	2.155 (8.157)	0.439 (0.267)	15.94 (3.141)	186 (85.6)	66 (18.9)	76 (24.4)	....
7.81 (5.82)	2113	0.921 (3.486)	0.826 (0.502)	8.48 (1.670)	178 (81.1)	66 (18.6)	76 (24.2)	....
22.98 (17.13)	2073	1.555 (5.886)	0.474 (0.288)	14.78 (2.911)	181 (82.8)	66 (18.9)	75 (23.9)	....
Av 18.48 (13.78)	2077	1.402 (5.308)	0.531 (0.323)	13.18 (2.596)	181 (82.5)	65 (19.6)	75 (24.1)	29.14 (98.38)
Av								

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (1H) Gear											
28.09 (21.40)	2027 (9.02)	5.31 (8.54)	2060	6.06	2.092 (7.919)	0.511 (0.311)	13.72 (2.702)	191 (88.3)	67 (19.2)	76 (24.4)	28.68 (96.83)
75% of Full at Maximum Power—Ten Hours 5th (1H) Gear											
22.07 (17.13)	1560 (6.96)	5.52 (8.89)	2042	4.90	1.721 (6.514)	0.525 (0.319)	13.55 (2.670)	187 (86.2)	58 (14.3)	69 (20.3)	29.02 (97.99)
50% of Full at Maximum Power—Two Hours 5th (1H) Gear											
15.80 (11.78)	1041 (4.63)	5.70 (9.17)	2076	2.87	1.564 (5.162)	0.604 (0.368)	11.59 (2.283)	187 (85.8)	68 (20.0)	81 (26.9)	28.67 (96.81)
50% of Full at Reduced Engine Speed—Two Hours 6th (2H) Gear											
15.78 (11.77)	1039 (4.62)	5.70 (9.17)	1413	2.69	1.121 (4.243)	0.497 (0.303)	14.08 (2.774)	187 (85.8)	70 (21.1)	84 (28.9)	28.68 (96.85)
MAXIMUM POWER IN SELECTED GEARS											
18.62 (13.89)	3824 (17.01)	1.83 (2.94)	2067	14.80	2nd (2L) Gear			186 (85.3)	61 (16.[illegible])	67 (19.4)	28.69 (96.88)
28.25 (21.07)	3100 (13.79)	3.42 (5.50)	2000	10.06	3rd (3L) Gear			190 (87.2)	62 (16.7)	69 (20.6)	28.68 (96.85)
28.45 (21.21)	2477 (11.02)	4.31 (6.93)	2000	7.57	4th (4L) Gear			190 (87.8)	63 (17.2)	70 (21.1)	28.68 (96.85)
29.39 (21.92)	2080 (9.25)	5.30 (8.53)	1999	6.17	5th (1H) Gear			190 (87.8)	64 (17.8)	73 (22.8)	28.67 (96.81)
29.05 (21.67)	1369 (6.09)	7.96 (12.81)	2002	4.03	8th (2H) Gear			190 (87.8)	63 (17.2)	71 (21.7)	28.67 (96.81)

LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm	1999	1797	1602	1397	1197	1000
Pull—lbs (kN)	2080 (9.25)	2179 (9.77)	2291 (10.27)	2343 (10.50)	2357 (10.56)	2324 (10.42)
Increase in Pull %	0	5	10	13	13	12
Power—Hp (kW)	29.39 (21.92)	27.39 (20.58)	23.76 (19.21)	22.89 (17.07)	19.69 (14.68)	16.27 (12.13)
Speed—Mph (km/h)	5.30 (8.53)	4.73 (7.64)	4.21 (6.78)	3.66 (5.90)	3.13 (5.04)	2.62 (4.22)
Slip %	6.17	6.36	6.95	7.14	7.56	7.14

Department of Agricultural Engineering

Dates of Test: May 9 to June 4, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.841.0 **Fuel weight** 7.003 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 1.750 gal *(6.624 l)* **Drained from motor** 1.061 gal *(4.017 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 41.0 hours.

ENGINE: Make Perkins Diesel **Type** three cylinder vertical **Serial No.** CE31106U731446K **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 5.6" × 5.0" *(91.4 mm × 127 mm)* **Compression ratio** 18.5 to 1 **Displacement** 152 cu in *(2491 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 552212 **Tread width** rear 52" *(1321 mm)* to 72" *(1829 mm)* front 52" *(1321 mm)* to 72" *(1829 mm)* **Wheel base** 76" *(1930 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.5" *(724 mm)* Vertical distance above roadway 27.0" *(685 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** constant running except when PTO clutch is disengaged **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.4 *(2.3)* second 2.1 *(3.4)* third 3.8 *(6.2)* fourth 4.7 *(7.6)* fifth 5.7 *(9.2)* sixth 8.4 *(13.4)* seventh 15.3 *(24.7)* eighth 18.8 *(30.3)* reverse 1.9 *(3.1)*, 7.8 *(12.5)* **Clutch** single dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" *(2.97 m)* left 118" *(3.00 m)* (on concrete surface without brake) right 131" *(3.32 m)* left 128" *(3.25 m)* **Turning space diameter** (on concrete surface with brake applied) right 240" *(6.10 m)* left 242" *(6.15 m)* (on concrete surface without brake) right 268" *(6.82 m)* left 262" *(6.66 m)* **Power take-off** 540 rpm at 1788 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	95.5
75% of Pull at Maximum Power—Ten Hours	94.0
50% of Pull at Maximum Power—Two Hours	93.5
50% of Pull at Reduced Engine Speed—Two Hours	91.0
Bystander in 7th (3H) gear	85.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 4; 14 *(95)*	Two 13.6-28; 4; 14 *(95)*
Ballast	—Liquid (each)	542 lb *(153 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6.00-16; 4; 32 *(220)*	Two 6.00-16; 4; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	43 lb *(19 kg)*	None
Height of Drawbar		14 in *(355 mm)*	14 in *(355 mm)*
Static Weight with Operator	—Rear	5550 lb *(1519 kg)*	2965 lb *(1209 kg)*
	—Front	1655 lb *(742 kg)*	1550 lb *(703 kg)*
	—Total	6985 lb *(2261 kg)*	4215 lb *(1912 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 139°F *(59.3°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1519,** July 5, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Massey Ferguson 240 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1520 — MASSEY FERGUSON 250 DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—479 rpm)								
40.86 (30.47)	2250	2.707 (10.249)	0.464 (0.282)	13.09 (2.974)	182 (83.4)	58 (14.4)	75 (23.8)	29.16 (98.68)
Standard Power Take-off Speed (540 rpm) — One hour)								
36.95 (27.56)	1780	2.238 (8.548)	0.443 (0.270)	13.80 (3.113)	185 (85.1)	58 (14.4)	75 (23.9)	29.13 (98.37)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
36.64 (27.32)	2574	2.450 (9.275)	0.468 (0.285)	14.95 (2.995)	180 (81.9)	58 (14.2)	75 (23.9)	....
0.00 (0.00)	2435	0.825 (3.113)	....	....	167 (75.0)	57 (13.9)	74 (23.3)	....
18.56 (13.84)	2405	1.388 (5.933)	0.392 (0.240)	11.84 (2.382)	173 (78.3)	58 (14.4)	75 (23.9)	....
30.75 (30.39)	2230	2.733 (10.346)	0.470 (0.286)	14.91 (2.987)	182 (83.1)	58 (14.4)	75 (23.9)	....
9.31 (6.94)	2416	1.178 (4.459)	0.886 (0.539)	7.90 (1.556)	170 (76.7)	58 (14.4)	75 (23.9)	....
27.84 (20.61)	2388	1.979 (7.492)	0.301 (0.305)	13.96 (2.751)	176 (80.0)	60 (15.3)	76 (24.4)	....
Av 22.15 (16.52)	2378	1.789 (6.770)	0.503 (0.344)	12.38 (2.440)	173 (79.2)	58 (14.4)	75 (23.9)	29.00 (98.31)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (1H) Gear											
54.80 (23.87)	2242 (9.97)	5.80 (9.34)	2250	5.77	2.685 (10.162)	0.542 (0.330)	12.92 (2.545)	186 (85.3)	56 (13.3)	63 (16.9)	28.81 (97.29)
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
28.18 (21.02)	1698 (7.55)	6.22 (10.02)	2576 (9.593)	4.34 (0.341)	2.235 (2.462)	0.560 (81.9)	12.50 (11.1)	180 (15.6)	52 (98.17)	60	29.07
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
19.05 (14.21)	1127 (5.01)	6.34 (10.20)	2305	5.32	1.778 (6.730)	0.654 (0.398)	10.72 (2.111)	176 (80.0)	52 (10.8)	56 (13.1)	28.81 (97.27)
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
19.04 (14.20)	1126 (5.01)	6.34 (10.20)	1632	3.20	1.421 (5.378)	0.525 (0.319)	13.40 (2.640)	176 (79.7)	53 (11.4)	57 (13.6)	28.82 (97.32)

MAXIMUM POWER IN SELECTED GEARS

25.97 (17.88)	4297 (19.11)	2.06 (3.37)	2580	12.74	2nd (1L) Gear			177 (80.6)	51 (10.6)	53 (11.7)	28.79 (97.22)
35.53 (25.08)	3350 (14.90)	5.75 (8.04)	2251	9.42	3rd (3L) Gear			183 (83.9)	51 (10.6)	53 (11.7)	28.79 (97.22)
35.92 (25.30)	2705 (12.02)	4.71 (7.58)	2251	7.44	4th (4L) Gear			184 (84.4)	51 (10.6)	54 (12.2)	28.79 (97.22)
35.07 26.15)	2264 (10.07)	5.81 (9.35)	2250	5.66	5th (1H) Gear			186 (85.3)	56 (13.3)	63 (17.2)	28.85 (97.35)
34.45 (25.69)	1430 (6.63)	8.67 (13.96)	2250	4.03	6th (2H) Gear			184 (84.4)	51 (10.6)	54 (12.2)	28.78 (97.19)

LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm	2250	2026	1805	1571	1355	1126
Pull—lbs (kN)	2264 (10.07)	2421 (10.85)	2585 (11.50)	2712 (12.16)	2768 (12.41)	2710 (12.15)
Increase in Pull %	0	7	14	20	22	20
Power—Hp (kW)	35.07 (26.15)	33.49 (24.90)	31.68 (23.62)	28.85 (21.52)	25.35 (18.89)	20.66 (15.40)
Speed—Mph (km/h)	5.81 (9.35)	5.19 (8.35)	4.80 (7.40)	3.99 (6.42)	3.43 (5.52)	2.86 (4.60)
Slip %	5.66	6.42	6.96	7.39	7.39	7.39

Department of Agricultural Engineering

Dates of Test: May 10-29, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8410 **Fuel weight** 7.005 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 2.495 gal *(9.444 l)* **Drained from motor** 1.144 gal *(4.332 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 43.0 hours.

ENGINE: Make Perkins Diesel **Type** three cylinder vertical **Serial No.** CE2248U73580L **Crankshaft** lengthwise **Rated rpm** 2250 **Bore and stroke** 3.6" × 5" *(91.4 mm × 127 mm)* **Compression ratio** 18.5 to 1 **Displacement** 152 cu in *(2491 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 624054 **Tread width** rear 52" *(1321 mm)* to 90" *(2286 mm)* front 52" *(1321 mm)* to 72" *(1829 mm)* **Wheel base** 76" *(1930 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.0" *(660 mm)* Vertical distance above roadway 27.0" *(686 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** constant running except when PTO clutch is disengaged **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.6 *(2.5)* second 2.3 *(3.7)* third 4.2 *(6.8)* fourth 5.2 *(8.3)* fifth 6.5 *(10.1)* sixth 9.2 *(14.8)* seventh 16.9 *(27.2)* eighth 20.8 *(33.4)* reverse 2.2 *(3.5)*, 8.6 *(13.8)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" *(2.97 m)* left 118" *(3.00 m)* (on concrete surface without brake) right 131" *(3.32 m)* left 128" *(3.25 m)* **Turning space diameter** (on concrete surface with brake applied) right 240" *(6.10 m)* left 242" *(6.15 m)* (on concrete surface without brake) right 268" *(6.82 m)* left 262" *(6.66 m)* **Power take-off** 540 rpm at 1789 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	98.5
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	95.0
50% of Pull at Reduced Engine Speed—Two Hours	93.0
Bystander in 7th (3H) gear	88.5

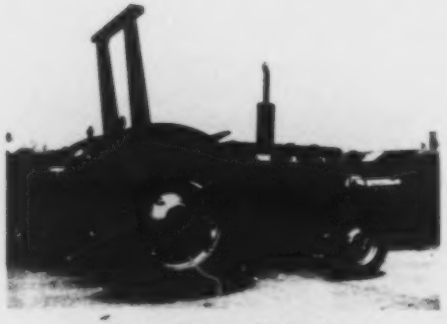
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 13.6-28; 6; 14 (97)	Two 13.6-28; 6; 14 (97)
Ballast	—Liquid (each)	470 lb (213 kg)	None
	—Cast Iron (each)	80 lb (36 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 6.00-16; 4; 32 (220)	Two 6.00-16; 4; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	37 lb (17 kg)	None
Height of Drawbar		17.5 in (445 mm)	17.5 in (445 mm)
Static Weight with Operator	—Rear	4140 lb (1878 kg)	3040 lb (1379 kg)
	—Front	1680 lb (735 kg)	1545 lb (701 kg)
	—Total	5780 lb (2613 kg)	4585 lb (2080 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 140°F *(63.2°C)*. Five gears were chosen between tire tangential pull limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1520**, July 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson 250 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1521 — MASSEY FERGUSON 270 DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Fuel Consumption Hp-hr/gal (kW-h/l)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—942 rpm)								
55.86 (41.66)	2080	3.440 (13.022)	0.431 (0.262)	10.25 (3.768)	180 (82.2)	68 (19.6)	75 (24.1)	29.04 (98.27)
Standard Power Take-off Speed (540 rpm) — One hour†								
52.75 (39.33)	1685	3.142 (11.896)	0.417 (0.254)	10.79 (3.968)	180 (82.2)	66 (18.9)	76 (24.4)	29.08 (98.43)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
48.62 (36.26)	2050	3.072 (11.627)	0.442 (0.269)	15.83 (5.110)	182 (83.3)	68 (19.9)	77 (25.1)	....
0.00 (0.00)	2001	1.101 (1.399)	....	....	177 (80.6)	68 (19.9)	75 (23.9)	....
25.40 (18.94)	2141	2.002 (7.581)	0.374 (0.349)	12.59 (2.460)	179 (81.7)	66 (18.9)	76 (24.2)	....
36.00 (40.27)	2001	3.486 (13.119)	0.438 (0.266)	10.36 (7.222)	185 (85.0)	66 (18.9)	77 (24.7)	....
12.90 (9.62)	2175	1.602 (6.065)	0.870 (0.529)	8.05 (1.587)	178 (81.1)	67 (19.4)	77 (25.0)	....
37.30 (27.80)	2004	2.565 (9.632)	0.470 (0.291)	14.65 (2.886)	181 (82.5)	66 (18.9)	77 (25.0)	....
Av **Av** 30.13 (22.46)	2110	2.521 (9.550)	0.530 (0.330)	12.99 (2.559)	180 (82.4)	68 (19.8)	76 (24.6)	29.01 (97.97)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp-hr (kg/kW-h)	Fuel Consumption Hp-hr/gal (kW-h/l)	Temp. °F (°C) Cooling medium	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (11th) Gear											
48.50 (34.50)	5402 (23.93)	4.97 (8.00)	1980	7.20	3.441 (13.027)	0.501 (0.317)	13.44 (2.648)	191 (88.3)	68 (19.7)	76 (24.2)	29.01 (98.30)
75% of Full at Maximum Power—Two Hours 5th (11th) Gear											
37.54 (27.85)	3980 (17.87)	3.25 (5.45)	2050	4.88	2.802 (10.799)	0.550 (0.325)	13.10 (2.580)	187 (86.1)	68 (19.4)	67 (19.2)	29.07 (97.48)
50% of Full at Maximum Power—Two Hours 5th (11th) Gear											
25.96 (19.36)	1700 (7.92)	3.67 (6.08)	2111	3.94	2.315 (8.757)	0.656 (0.388)	11.22 (2.321)	187 (86.1)	70 (20.8)	80 (26.4)	29.10 (98.54)
50% of Full at Reduced Engine Speed—Two Hours 6th (12th) Gear											
25.90 (19.34)	1770 (7.91)	5.48 (8.82)	1450	3.21	1.949 (7.380)	0.498 (0.305)	14.06 (2.909)	186 (85.6)	73 (22.7)	81 (26.9)	29.10 (98.49)
MAXIMUM POWER IN SELECTED GEARS											
27.07 (20.19)	5096 (26.23)	1.72 (2.77)	2100	14.87	3rd (3L) Gear			185 (85.3)	64 (17.8)	69 (20.6)	29.04 (98.31)
44.51 (33.04)	5446 (24.22)	3.05 (4.91)	1980	13.42	3rd (3L) Gear			190 (87.7)	65 (18.3)	72 (22.2)	29.03 (98.68)
46.85 (34.94)	4425 (19.68)	3.90 (6.28)	2001	9.84	4th (4L) Gear			191 (88.1)	64 (17.8)	72 (22.2)	29.03 (98.65)
47.08 (35.11)	3868 (17.20)	4.95 (7.99)	1980	7.44	5th (1H) Gear			190 (87.8)	66 (18.9)	74 (23.3)	29.02 (98.65)
47.04 (35.08)	2594 (10.47)	7.50 (12.06)	2080	4.77	6th (2H) Gear			189 (87.2)	64 (17.8)	72 (22.2)	29.02 (98.65)

LUGGING ABILITY IN 5th (11th) GEAR

Crankshaft Speed rpm	1980	1801	1507	1303	1200	1080
Pull—lbs (kN)	3958 (17.61)	3961 (17.20)	4072 (18.27)	4229 (18.96)	4305 (19.19)	4170 (18.69)
Increase in Pull %	0	8	14	10	22	17
Power—Hp (kW)	47.08 (35.11)	45.47 (33.91)	42.47 (31.67)	39.22 (29.30)	35.55 (25.62)	27.07 (20.19)
Speed—Mph (km/h)	4.56 (7.34)	4.44 (7.14)	3.91 (6.29)	3.59 (5.47)	2.91 (4.68)	2.43 (3.92)
Slip %	7.44	8.69	8.69	9.58	9.61	9.58

Department of Agricultural Engineering

Dates of Test: May 19-25, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 92 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: **Fuel** No. 1 Diesel **Cetane No.** 46.9 (rating taken from oil company's inspection data) **Specific gravity converted to 60° /60° (15°/15°)** 0.8010 **Fuel weight** 7.005 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 1.734 gal *(6.679 l)* **Drained from motor** 1.571 gal *(5.946 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Tested time engine was operated** 49.0 hours.

ENGINE: **Make** Perkins Diesel **Type** four cylinder vertical **Serial No.** LD227845U/852437R. **Crankshaft** lengthwise **Rated rpm** 2080 **Bore and stroke** 5.875" x 5.0" *(90.4 mm x 127 mm)* **Compression ratio** 16 to 1 **Displacement** 256 cu in *(1063 cc)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** 297194 **Tread width** rear 56" *(1422 mm)* to 96" *(2280 mm)* front 52" *(1321 mm)* to 72" *(1829 mm)* **Wheel base** 84" *(2134 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.5" *(700 mm)* Vertical distance above roadway 52.0" *(813 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left: **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.9 *(2.1)* second 1.9 *(3.1)* third 3.5 *(5.6)* fourth 4.3 (6.9) fifth 5.5 *(8.8)* sixth 7.8 *(12.6)* seventh 14.3 *(20.1)* eighth 17.6 *(20.3)* reverse 1.8 (2.9), 7.2 *(11.6)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically-operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 131" *(3.33 m)* left 128" *(3.25 m)* (on concrete surface without brake) right 157" *(3.99 m)* left 151" *(3.84 m)* **Turning space diameter** (on concrete surface with brake applied) right 270" *(6.86 m)* left 264" *(6.71 m)* (on concrete surface without brake) right 322" *(8.18 m)* left 310" *(7.87 m)* **Power take-off** 540 rpm at 1685 engine rpm.

REPAIRS and ADJUSTMENTS: The PTO clutch was adjusted during preliminary PTO tests.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	98.5
75% of Full at Maximum Power—Two Hours	94.0
50% of Full at Maximum Power—Two Hours	95.0
50% of Full at Reduced Engine Speed—Two Hours	91.5
Bystander in 7th (2H) gear	86.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—Make, size, ply & psi (kPa)	Two 18.9-30; 6; 18 *(123)*	Two 16.9-30; 6; 18 *(123)*
Ballast	—Liquid (each)	898 lb *(2759 kg)*	None
	—Cast iron (each)	None	None
Front Tires	—Make, size, ply & psi (kPa)	Two 7.5L-15; 6; 44 *(303)*	Two 7.5L-15; 6; 44 *(303)*
Ballast	—Liquid (each)	None	None
	—Cast iron (each)	55 lb *(24 kg)*	None
Height of Drawbar		10.5 in *(495 mm)*	19.5 in *(495 mm)*
Static Weight with Operator—Rear		5985 lb *(2869 kg)*	4695 lb *(2130 kg)*
—Front		3310 lb *(1545 kg)*	2705 lb *(1000 kg)*
—Total		9318 lb *(4717 kg)*	8000 lb *(3130 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 149°F *(65.1°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1521, July 5, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Massey Ferguson 270 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1522
MASSEY FERGUSON 290 MULTIPOWER DIESEL
12 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—464 rpm)								
65.92 (49.16)	2200	4.234 (16.025)	0.450 (0.274)	15.57 (3.068)	187 (86.1)	60 (15.6)	75 (23.8)	28.79 (97.21)
Standard Power Take-off Speed (540 rpm) — One hour)								
59.37 (44.27)	1789	3.581 (13.553)	0.422 (0.257)	16.58 (3.266)	187 (86.1)	60 (15.6)	75 (23.9)	28.78 (97.17)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
58.12 (43.34)	2282	3.778 (14.302)	0.455 (0.277)	15.38 (3.030)	184 (84.4)	61 (16.1)	77 (25.0)	....
0.00 (0.00)	2580	1.285 (4.865)	....	....	175 (79.4)	61 (15.8)	76 (24.2)	....
29.83 (22.24)	2338	2.468 (9.340)	0.579 (0.352)	12.09 (2.381)	179 (81.7)	60 (15.6)	75 (23.9)	....
66.20 (49.37)	2201	4.250 (16.086)	0.450 (0.273)	15.58 (3.069)	187 (86.1)	60 (15.6)	75 (23.9)	....
15.05 (11.21)	2361	1.868 (7.070)	0.870 (0.529)	8.05 (1.586)	179 (81.7)	60 (15.3)	75 (23.6)	....
44.13 (32.91)	2511	5.084 (11.673)	0.489 (0.298)	14.51 (2.858)	181 (82.8)	60 (15.6)	75 (23.6)	....
Av **35.55** (26.51)	**2312**	**2.788** (10.334)	**0.549** (0.334)	**12.75** (2.511)	**181** (82.7)	**60** (15.6)	**75** (24.0)	**28.79** (97.23)
Av								

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C): Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1HL) Gear											
55.32 (41.25)	4260 (18.95)	4.87 (7.84)	2201	6.98	4.177 (15.811)	0.529 (0.322)	13.24 (2.609)	188 (86.4)	32 (10.8)	59 (14.7)	29.32 (99.01)
75% of Pull at Maximum Power—Ten Hours 7th (1HL) Gear											
44.95 (33.50)	5241 (14.42)	5.20 (8.37)	2294	4.78	3.521 (13.330)	0.549 (0.334)	12.76 (2.514)	186 (85.7)	61 (15.9)	65 (18.5)	29.29 (98.90)
50% of Pull at Maximum Power—Two Hours 7th (1HL) Gear											
30.80 (22.97)	2161 (9.61)	5.34 (8.60)	2325	3.37	2.806 (10.622)	0.638 (0.388)	10.98 (2.162)	185 (84.7)	54 (11.9)	63 (16.9)	29.31 (98.96)
50% of Pull at Reduced Engine Speed—Two Hours 9th (2HL) Gear											
30.81 (22.98)	2161 (9.61)	5.35 (8.61)	1584	3.25	2.192 (8.297)	0.498 (0.303)	14.06 (2.769)	184 (84.2)	61 (15.5)	66 (18.9)	29.28 (98.86)
MAXIMUM POWER IN SELECTED GEARS											
44.35 (33.07)	7654 (34.05)	2.17 (3.50)	2290	14.34	4th (2LH) Gear			186 (85.6)	46 (7.8)	50 (10.0)	29.26 (98.81)
55.54 (39.92)	6595 (29.33)	3.04 (4.90)	2291	11.61	5th (3LL) Gear			187 (85.8)	47 (8.3)	51 (10.6)	29.27 (98.84)
55.39 (41.31)	5075 (22.57)	4.09 (6.59)	2290	8.42	6th (3LH) Gear			187 (85.8)	47 (8.3)	52 (11.1)	29.28 (98.87)
56.10 (41.84)	4321 (19.22)	4.87 (7.84)	2290	6.98	7th (1HL) Gear			187 (86.1)	50 (10.0)	55 (12.8)	29.31 (98.98)
56.36 (42.03)	3284 (14.61)	6.44 (10.36)	2198	5.38	8th (1HH) Gear			187 (86.1)	48 (8.9)	53 (11.7)	29.29 (98.91)
55.46 (41.35)	2839 (12.63)	7.33 (11.79)	2201	4.58	9th (2HL) Gear			187 (85.8)	49 (9.4)	54 (12.2)	29.30 (98.94)
54.81 (40.87)	2134 (9.49)	9.63 (15.50)	2199	3.51	10th (2HH) Gear			187 (85.8)	49 (9.4)	54 (12.2)	29.31 (98.98)

Department of Agricultural Engineering

Dates of Test: May 11-31, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8410 **Fuel weight** 7.003 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 1.576 gal *(5.967 l)* **Drained from motor** 1.382 gal *(5.230 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 48.5 hours.

ENGINE: Make Perkins Diesel **Type** four cylinder vertical **Serial No.** LF22790U886774K **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 3.975" × 5" *(101 mm × 127 mm)* **Compression ratio** 16 to 1 **Displacement** 248 cu in *(4065 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 389979 **Tread width** rear 56" *(1422 mm)* to 90" *(2286 mm)* front 52" *(1321 mm)* to 72" *(1829 mm)* **Wheel base** 84" *(2134 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 32.3" *(820 mm)* Vertical distance above roadway 33.0" *(838 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.3 *(2.1)* second 1.7 *(2.7)* third 1.9 *(3.1)* fourth 2.5 *(4.0)* fifth 3.5 *(5.7)* sixth 4.6 *(7.4)* seventh 5.4 *(8.6)* eighth 7.0 *(11.2)* ninth 7.9 *(12.7)* tenth 10.3 *(16.5)* eleventh 14.4 *(23.2)* twelfth 18.8 *(30.2)* reverse 1.8 *(2.9)*, 2.3 *(3.7)* 7.3 *(11.8)* 9.5 *(15.3)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 128" *(3.25 m)* left 124" *(3.15 m)* (on concrete surface without brake) right 152" *(3.86 m)* left 148" *(3.76 m)* **Turning space diameter** (on concrete surface with brake applied) right 265" *(6.73 m)* left 257" *(6.53 m)* (on concrete surface without brake) right 312" *(7.92 m)* left 303" *(7.70 m)* **Power take-off** 540 rpm at 1789 engine rpm.

LUGGING ABILITY IN 7th (1HL) GEAR

Crankshaft Speed rpm	2290	1986	1751	1541	1314	1097
Pull—lbs (kN)	4321 (19.22)	4603 (20.63)	4855 (21.76)	4932 (22.11)	5102 (22.87)	5033 (22.56)
Increase in Pull %	0	7	12	14	18	16
Power—Hp (kW)	56.10 (41.84)	53.86 (40.02)	49.85 (37.03)	44.31 (33.04)	38.94 (29.04)	32.08 (23.92)
Speed—Mph (km/h)	4.87 (7.84)	4.57 (7.04)	3.84 (6.17)	3.57 (5.42)	2.86 (4.61)	2.39 (3.85)
Slip %	6.98	7.55	8.05	8.05	8.54	8.42

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	97.5
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	93.0
Bystander in 12th (3HH) gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-30; 6; 16 (110)	Two 18.4-30; 0; 16 (110)
Ballast	—Liquid (each)	905 lb (410 kg)	None
	—Cast Iron (each)	610 lb (277 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-16; 6; 40 (275)	Two 7.50-16; 6; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	50 lb (23 kg)	None
Height of Drawbar		16 in (405 mm)	16 in (405 mm)
Static Weight with Operator	—Rear	6755 lb (3064 kg)	5725 lb (1690 kg)
	—Front	2315 lb (1050 kg)	2215 lb (1005 kg)
	—Total	9070 lb (4114 kg)	7940 lb (2697 kg)

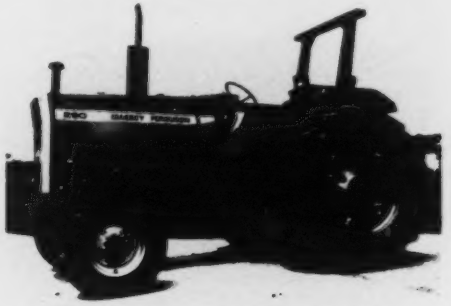
REPAIRS and ADJUSTMENTS: During the limber up run, the left rear tire developed a fluid leak between the tire bead and rim. A tube was installed and test continued.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 156°F *(68.6°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1522**, July 5, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson 290 Multipower Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1523 — MASSEY FERGUSON 298 DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1182 rpm)								
79.54 (59.32)	2000	5.122 (19.387)	0.451 (0.274)	15.55 (3.060)	185 (85.0)	68 (17.3)	75 (23.9)	28.83 (97.57)
Standard Power Take-off Speed (1000 rpm) — One hour)								
75.06 (54.93)	1692	4.517 (17.099)	0.429 (0.261)	16.31 (3.213)	184 (84.4)	64 (17.7)	75 (23.9)	28.86 (97.44)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
70.67 (52.70)	2091	4.575 (17.318)	0.455 (0.276)	15.45 (3.045)	182 (83.1)	65 (18.1)	76 (24.2)	....
0.00 (0.00)	2219	1.641 (6.211)	....	....	176 (80.0)	64 (17.5)	74 (23.1)	....
36.49 (27.21)	2100	2.943 (11.140)	0.565 (0.344)	12.60 (2.483)	179 (81.7)	64 (17.8)	76 (24.2)	....
80.05 (59.69)	2000	5.102 (19.540)	0.452 (0.275)	15.51 (3.055)	185 (84.7)	63 (17.2)	76 (24.2)	....
21.19 (15.80)	2186	2.356 (8.919)	0.779 (0.474)	8.99 (1.772)	177 (80.6)	62 (16.7)	74 (23.3)	....
55.95 (40.23)	2128	3.684 (13.946)	0.478 (0.291)	14.64 (2.885)	180 (82.2)	65 (17.2)	77 (24.7)	....
Av 48.72 (36.34)	2131	3.394 (12.846)	0.544 (0.331)	12.88 (2.538)	180 (82.0)	63 (17.4)	75 (23.9)	28.87 (97.50)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool. mg med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (1H) Gear											
68.49 (51.07)	4989 (22.19)	5.15 (8.29)	2000	6.77	5.084 (19.243)	0.320 (0.316)	13.67 (2.634)	180 (86.7)	55 (12.5)	64 (17.8)	29.14 (98.38)
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
56.42 (42.07)	3820 (16.99)	5.54 (8.91)	2100	4.80	4.294 (16.254)	0.333 (0.324)	15.14 (2.588)	180 (86.6)	64 (17.6)	75 (23.8)	28.72 (96.99)
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
38.91 (29.08)	2547 (11.33)	5.75 (9.22)	2144	3.28	3.370 (12.757)	0.606 (0.369)	11.58 (2.275)	185 (85.0)	58 (14.2)	69 (20.6)	29.10 (98.25)
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
38.91 (29.08)	2546 (11.33)	5.75 (9.22)	1450	2.99	2.613 (9.893)	0.470 (0.286)	14.89 (2.993)	183 (85.0)	60 (15.6)	72 (22.2)	29.03 (98.03)
MAXIMUM POWER IN SELECTED GEARS											
41.72 (31.11)	8712 (38.75)	1.80 (2.89)	2127	14.68	2nd (2L) Gear			183 (83.9)	49 (9.4)	55 (12.8)	29.19 (98.57)
65.54 (48.88)	7872 (34.12)	3.39 (5.38)	1999	11.71	3rd (3L) Gear			183 (85.0)	50 (10.0)	58 (14.4)	29.18 (98.54)
67.84 (50.44)	8250 (27.88)	4.96 (6.33)	2000	8.97	4th (4L) Gear			186 (85.6)	52 (11.1)	60 (15.6)	29.17 (98.50)
68.74 (52.01)	5093 (22.65)	5.14 (9.26)	1998	6.94	5th (1H) Gear			187 (86.1)	53 (11.7)	63 (17.2)	29.16 (98.47)
68.58 (51.73)	3568 (16.98)	7.73 (12.45)	2001	4.74	6th (2H) Gear			187 (85.8)	53 (11.7)	62 (16.7)	29.17 (98.50)

LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm	1998	1802	1600	1399	1198	997
Pull—lbs (kN)	5093 (22.65)	5405 (24.23)	5745 (25.73)	5887 (26.39)	5951 (26.67)	5878 (26.35)
Increase in Pull %	0	6	13	16	17	15
Power—Hp (kW)	69.74 (52.01)	66.35 (49.66)	62.27 (46.43)	55.64 (41.49)	48.98 (35.86)	39.57 (29.51)
Speed—Mph (km/h)	5.14 (8.26)	4.60 (7.41)	4.06 (6.54)	3.54 (5.70)	3.05 (4.88)	2.52 (4.06)
Slip %	6.94	7.47	8.13	8.25	8.30	8.36

Department of Agricultural Engineering

Dates of Test: May 16 to June 1, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8410 **Fuel weight** 7.003 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 2.597 gal *(9.831 l)* **Drained from motor** 2.085 gal *(7.892 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 44.0 hours.

ENGINE: Make Perkins Diesel **Type** four cylinder vertical **Serial No.** ND31120U529075K **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.5" × 5" *(114.4 mm × 127 mm)* **Compression ratio** 17.5 to 1 **Displacement** 318 cu in *(5212 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 703074 **Tread width** rear 60" *(1524 mm)* to 96" *(2438 mm)* front 57" *(1448 mm)* to 77" *(1956 mm)* **Wheel base** 96" *(2438 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 32.2" *(818 mm)* Vertical distance above roadway 33.0" *(838 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.4 *(2.2)* second 2.0 *(3.3)* third 3.7 *(6.0)* fourth 4.6 *(7.3)* fifth 5.7 *(9.1)* sixth 8.3 *(13.3)* seventh 15.2 *(24.5)* eighth 18.7 *(30.0)* reverse 1.9 *(3.0)*, 7.7 *(12.4)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 160" *(4.07 m)* left 163" *(4.14 m)* (on concrete surface without brake) right 192" *(4.87 m)* left 197" *(5.00 m)* **Turning space diameter** (on concrete surface with brake applied) right 328" *(8.34 m)* left 334" *(8.48 m)* (on concrete surface without brake) right 392" *(9.94 m)* left 402" *(10.20 m)* **Power take-off** 540 rpm at 1686 engine rpm and 1000 rpm at 1692 engine rpm.

REPAIRS and ADJUSTMENTS: During the preliminary PTO test, the No. 3 injector was found to be leaking. Test continued after the copper sealing washer under the injector cap was replaced.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	100.0
75% of Pull at Maximum Power—Ten Hours	99.0
50% of Pull at Maximum Power—Two Hours	97.5
50% of Pull at Reduced Engine Speed—Two Hours	97.0
Bystander in 7th (3H) gear	90.0

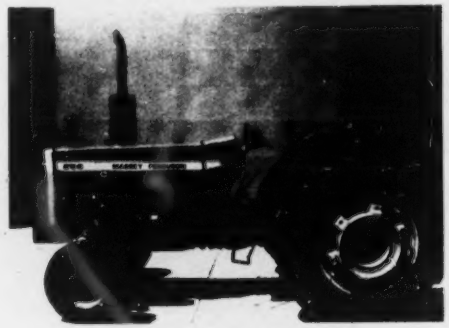
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*
Ballast	—Liquid (each)	395 lb *(451 kg)*	None
	—Cast Iron (each)	495 lb *(225 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5L-15; 6; 32 *(220)*	Two 9.5L-15; 6; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		22.5 in *(570 mm)*	22.5 in *(570 mm)*
Basic Weight with Operator	—Rear	8335 lb *(3781 kg)*	5355 lb *(2429 kg)*
	—Front	2705 lb *(1227 kg)*	2615 lb *(1186 kg)*
	—Total	11040 lb *(5008 kg)*	7970 lb *(3615 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 155°F *(68.5°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1523,** July 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson 298 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1524
MASSEY FERGUSON 298 MULTIPOWER DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1102 rpm)								
79.26 (59.10)	2000	5.419 (20.511)	0.479 (0.291)	14.63 (2.881)	185 (85.2)	66 (19.1)	75 (24.0)	28.99 (97.88)
Standard Power Take-off Speed (1000 rpm) — One hour)								
74.25 (55.37)	1692	4.722 (17.874)	0.445 (0.271)	15.72 (3.098)	185 (85.1)	65 (18.4)	75 (23.9)	28.99 (97.88)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
69.91 (52.13)	2076	4.759 (18.016)	0.477 (0.290)	14.69 (2.894)	183 (83.6)	65 (18.3)	75 (23.9)	....
0.00 (0.00)	2198	1.962 (7.427)	....	....	178 (81.1)	65 (18.3)	75 (23.9)	....
36.29 (27.06)	2143	3.114 (11.789)	0.601 (0.366)	11.65 (2.296)	180 (82.2)	64 (17.3)	74 (23.3)	....
78.98 (58.89)	2001	5.415 (20.497)	0.480 (0.292)	14.59 (2.873)	186 (85.6)	65 (18.3)	76 (24.2)	....
18.35 (13.69)	2177	2.412 (9.129)	0.920 (0.560)	7.61 (1.499)	179 (81.7)	65 (18.3)	76 (24.2)	....
53.31 (39.75)	2110	3.860 (14.610)	0.507 (0.308)	13.81 (2.721)	181 (82.8)	65 (18.3)	76 (24.4)	....
Av **42.81** (31.92)	**2117**	**3.587** (13.578)	**0.587** (0.357)	**11.93** (2.351)	**181** (82.8)	**65** (18.2)	**75** (24.0)	**28.97** (97.84)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1HL) Gear											
66.12 (49.31)	4835 (21.50)	5.13 (8.26)	2000	7.45	5.333 (20.189)	0.565 (0.344)	12.40 (2.442)	192 (88.9)	67 (19.4)	73 (22.5)	29.15 (98.64)
75% of Pull at Maximum Power—Ten Hours 7th (1HL) Gear											
54.27 (49.47)	3607 (16.43)	5.50 (8.86)	2088	4.88	4.380 (16.578)	0.565 (0.344)	12.39 (2.441)	190 (87.6)	66 (18.7)	73 (22.8)	28.66 (96.78)
50% of Pull at Maximum Power—Two Hours 7th (1HL) Gear											
37.50 (27.96)	2465 (10.96)	5.70 (9.18)	2130	3.34	3.477 (13.162)	0.649 (0.395)	10.79 (2.125)	188 (86.7)	72 (22.2)	76 (24.4)	29.09 (98.23)
50% of Pull at Reduced Engine Speed—Two Hours 9th (2HL) Gear											
37.50 (27.97)	2465 (10.96)	5.71 (9.18)	1450	3.25	2.613 (9.892)	0.488 (0.297)	14.35 (2.827)	187 (85.8)	73 (22.3)	76 (24.4)	29.03 (98.01)
MAXIMUM POWER IN SELECTED GEARS											
52.99 (39.52)	8663 (38.53)	2.29 (3.69)	2075	14.91	4th (2LH) Gear			188 (86.7)	56 (13.3)	64 (17.8)	28.75 (97.02)
65.35 (47.24)	7512 (33.42)	3.16 (5.09)	1999	13.15	5th (3LL) Gear			190 (87.8)	58 (13.3)	67 (19.4)	29.17 (98.50)
65.12 (48.56)	5830 (25.84)	4.34 (6.98)	2000	8.95	6th (3LH) Gear			191 (88.3)	57 (13.9)	68 (20.0)	29.17 (98.50)
67.44 (50.29)	4929 (21.92)	5.13 (8.26)	2000	7.40	7th (1HL) Gear			191 (88.3)	64 (17.8)	71 (21.7)	29.17 (98.50)
67.55 (50.37)	3700 (16.46)	6.85 (11.02)	2000	5.58	8th (1HH) Gear			191 (88.3)	59 (15.0)	69 (20.6)	29.17 (98.50)
67.85 (50.60)	3290 (16.63)	7.75 (12.43)	2000	4.89	9th (2HL) Gear			191 (88.3)	61 (16.1)	70 (21.1)	29.17 (98.50)

Department of Agricultural Engineering

Dates of Test: May 12-28, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8410 **Fuel weight** 7.003 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification SE, SF, CC, CD To motor** 2.290 gal *(8.669 l)* **Drained from motor** 1.858 gal *(7.032 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 43.0 hours.

ENGINE: Make Perkins Diesel **Type** four cylinder vertical **Serial No.** ND31120U529059K **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.5" × 5" *(114.4 mm × 127 mm)* **Compression ratio** 17.5 to 1 **Displacement** 318 cu in *(5212 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 705082 **Tread width** rear 60" *(1524 mm)* to 96" *(2438 mm)* front 57" *(1448 mm)* to 77" *(1956 mm)* **Wheel base** 96" *(2438 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 32.0" *(813 mm)* Vertical distance above roadway 33.0" *(838 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.4 *(2.3)* second 1.8 *(2.9)* third 2.1 *(3.3)* fourth 2.7 *(4.3)* fifth 3.7 *(6.0)* sixth 4.9 *(7.9)* seventh 5.7 *(9.2)* eighth 7.5 *(12.0)* ninth 8.4 *(13.5)* tenth 10.9 *(17.6)* eleventh 15.4 *(24.7)* twelfth 20.1 *(32.3)* reverse 1.9 *(3.1)*, 2.5 *(4.0)* 7.8 *(12.5)* 10.1 *(16.3)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 160" *(4.07 m)* left 163" *(4.14 m)* (on concrete surface without brake) right 192" *(4.87 m)* left 197" *(5.00 m)* **Turning space diameter** (on concrete surface with brake applied) right 328" *(8.34 m)* left 334" *(8.48 m)* (on concrete surface without brake) right 392" *(9.94 m)* left 402" *(10.20 m)* **Power take-off** 540 rpm at 1686 engine rpm and 1000 at 1692 engine rpm.

LUGGING ABILITY IN 7th (1HL) GEAR

Crankshaft Speed rpm	2000	1798	1605	1395	1195	998
Pull—lbs (kN)	4929 (21.92)	5344 (23.99)	5640 (25.20)	5810 (26.04)	5952 (26.68)	5914 (26.31)
Increase in Pull %	0	8	14	18	21	20
Power—Hp (kW)	67.44 (50.29)	65.14 (48.58)	60.97 (45.47)	54.41 (40.57)	47.56 (35.47)	39.48 (29.44)
Speed—Mph (km/h)	5.13 (8.26)	4.57 (7.36)	4.05 (6.52)	3.51 (5.65)	3.00 (4.82)	2.50 (4.03)
Slip %	7.40	8.51	8.83	9.21	9.46	9.46

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	99.5
75% of Pull at Maximum Power—Ten Hours	97.5
50% of Pull at Maximum Power—Two Hours	96.5
50% of Pull at Reduced Engine Speed—Two Hours	95.5
Bystander in 11th (3HL) gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	1020 lb (463 kg)	None
	—Cast Iron (each)	410 lb (186 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5L-15; 6; 32 (220)	Two 9.5L-15; 6; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	38 lb (17 kg)	None
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)
Static Weight with Operator—Rear		8260 lb (3747 kg)	5400 lb (2449 kg)
—Front		2690 lb (1220 kg)	2615 lb (1186 kg)
—Total		10950 lb (4967 kg)	8015 lb (3635 kg)

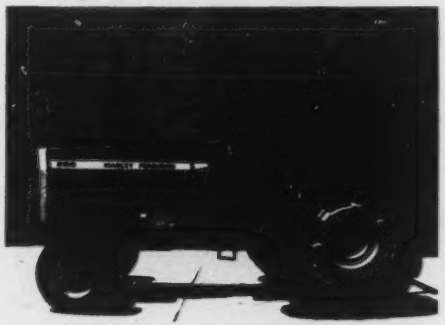
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 165°F *(72.5°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1524,** July 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson 298 Multipower Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1538—MASSEY FERGUSON 670 DIESEL ALSO MASSEY FERGUSON 270 MULTIPOWER DIESEL 12 SPEED

POWER TAKE-OFF PERFOEMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1182 rpm)								
55.02 (41.48)	2001	3.579 (13.547)	0.449 (0.273)	15.54 (3.062)	187 (86.1)	68 (17.1)	75 (23.9)	28.60 (96.87)
Standard Power Take-off Speed (1000 rpm)—One Hour								
51.44 (38.36)	1692	3.138 (11.879)	0.426 (0.259)	16.59 (3.229)	187 (85.8)	62 (16.4)	75 (23.8)	28.60 (96.88)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
46.92 (36.41)	2062	3.239 (13.260)	0.463 (0.281)	15.07 (2.970)	182 (83.1)	63 (17.2)	75 (23.6)	....
0.00 (0.00)	2197	1.222 (4.624)	....	....	175 (79.4)	63 (17.2)	75 (23.8)	....
25.02 (18.66)	2115	2.146 (8.124)	0.598 (0.364)	11.86 (2.297)	176 (80.0)	64 (17.8)	76 (24.2)	....
36.02 (41.78)	2000	3.585 (13.562)	0.446 (0.271)	15.64 (3.080)	186 (85.6)	64 (17.8)	74 (23.3)	....
12.64 (9.42)	2158	1.673 (6.333)	0.924 (0.562)	7.55 (1.488)	176 (80.0)	64 (17.8)	74 (23.3)	....
37.02 (27.61)	2089	2.684 (10.045)	0.500 (0.304)	13.98 (2.748)	176 (80.0)	64 (17.5)	74 (23.5)	....
Av 29.02 Av (30.31)	2005	2.419 (9.158)	0.564 (0.343)	12.97 (2.496)	178 (81.3)	64 (17.5)	74 (23.6)	28.71 (96.94)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
45.52 (33.94)	3505 (15.58)	4.87 (7.84)	2002	0.44	3.520 (13.324)	0.599 (0.328)	12.93 (2.548)	185 (85.0)	61 (16.1)	75 (23.6)	28.83 (97.55)
75% of Pull at Maximum Power—Two Hours 7th (1LH) Gear											
36.41 (27.15)	2687 (11.82)	5.14 (8.27)	2065	4.40	3.080 (11.390)	0.577 (0.351)	12.10 (2.389)	177 (80.5)	63 (17.1)	68 (20.0)	28.60 (96.87)
80% of Pull at Maximum Power—Two Hours 7th (1LH) Gear											
34.95 (18.59)	1772 (7.88)	5.27 (8.49)	2067	2.94	2.430 (9.199)	0.680 (0.414)	10.96 (2.021)	177 (80.5)	59 (14.7)	64 (17.5)	28.86 (97.66)
80% of Pull at Reduced Engine Speed—Two Hours 9th (2LH) Gear											
34.96 (18.61)	1771 (7.88)	5.28 (8.50)	1992	2.77	1.921 (7.272)	0.537 (0.327)	12.99 (2.558)	178 (81.1)	61 (16.1)	68 (19.7)	28.86 (97.66)
MAXIMUM POWER IN SELECTED GEARS											
36.18 (26.92)	6502 (28.39)	2.12 (3.41)	2060	14.81	4th (2HL) Gear			177 (80.6)	59 (15.0)	62 (16.7)	28.76 (97.12)
44.78 (33.39)	5422 (24.13)	5.10 (8.58)	1987	11.54	5th (3LL) Gear			180 (81.9)	60 (15.6)	66 (18.9)	28.80 (97.25)
45.56 (33.97)	4196 (18.66)	4.07 (6.55)	1990	8.11	6th (3HL) Gear			181 (82.3)	60 (15.6)	66 (18.9)	28.80 (97.25)
48.05 (34.34)	3543 (15.76)	4.87 (7.84)	2000	6.41	7th (1LH) Gear			184 (84.2)	60 (15.6)	72 (22.2)	28.84 (97.39)
45.76 (34.08)	2735 (12.17)	6.27 (10.08)	1980	4.77	8th (1HH) Gear			181 (82.8)	59 (15.0)	67 (19.4)	28.81 (97.29)
44.97 (33.53)	2250 (10.01)	7.49 (12.06)	2001	3.89	9th (2LH) Gear			181 (82.5)	59 (15.0)	66 (20.0)	28.82 (97.32)
43.02 (32.73)	1718 (7.64)	9.39 (15.43)	1980	3.00	10th (2HH) Gear			180 (81.9)	58 (14.4)	66 (20.0)	28.82 (97.32)

Department of Agricultural Engineering

Dates of Test: September 5-29, 1984

Manufacturer: MASSEY FERGUSON S.A. Avenue Blaise Pascal, 60026 Beauvais, France

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F** *(15/15°C)* 0.8377 **Fuel weight** 6.975 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, CC, CD **To motor** 1.911 gal *(7.232 l)* **Drained from motor** 1.580 gal *(5.980 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 42.5 hours.

ENGINE: Make Perkins Diesel **Type** four cylinder vertical **Serial No.** LD51110U932519K **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 5.875" × 5.0" *(98.4 mm × 127 mm)* **Compression ratio** 16 to 1 **Displacement** 236 cu in *(3863 ml)* **Starting system** 12 volt **Lubrication pressure Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** Δ670RUK 323002Δ **Tread width** rear 56" *(1422 mm)* to 90" *(2286 mm)* front 58" *(1484 mm)* to 70" *(1790 mm)* **Wheel base** 90" *(2286 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 34.1" *(867 mm)* Vertical distance above roadway 37.7" *(958 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.3 *(2.1)* second 1.6 *(2.6)* third 1.9 *(3.1)* fourth 2.4 *(3.9)* fifth 3.5 *(5.7)* sixth 4.5 *(7.2)* seventh 5.5 *(8.5)* eighth 6.7 *(10.7)* ninth 7.9 *(12.7)* tenth 10.0 *(16.1)* eleventh 14.5 *(23.3)* twelfth 18.5 *(29.5)* reverse 1.9 *(3.1)*, 2.4 *(3.9)*, 7.9 *(12.7)*, 10.0 *(16.1)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 165" *(4.19 m)* left 165" *(4.14 m)* (on concrete surface without brake) right 195" *(4.95 m)* left 192.5" *(4.89 m)* **Turning space diameter** (on concrete surface with brake applied) right 341" *(8.66 m)* left 337" *(8.56 m)* (on concrete surface without brake) right 401" *(10.19 m)* left 396" *(10.06 m)* **Power take-off** 540 rpm at 1686 engine rpm and 1000 rpm at 1692 engine rpm **Unladen tractor mass** 8545 lb *(3876 kg)*.

LUGGING ABILITY IN 7th (1LH) GEAR

Crankshaft Speed rpm	2000	1802	1604	1392	1198	985
Pull—lbs (kN)	3543 (15.76)	3901 (16.91)	4080 (17.83)	4235 (18.79)	4330 (19.39)	4241 (18.86)
Increase in Pull %	0	7	13	19	23	20
Power—Hp (kW)	48.08 (34.34)	44.27 (33.01)	41.92 (30.76)	37.55 (28.09)	33.12 (24.70)	26.84 (20.01)
Speed—Mph (km/h)	4.87 (7.84)	4.37 (7.03)	3.86 (6.21)	3.33 (5.36)	2.83 (4.59)	2.37 (3.82)
Slip %	6.41	6.78	7.51	8.11	8.35	8.11

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	79.5	80.5
75% of Pull at Maximum Power—Two Hours		80.0
80% of Pull at Maximum Power—Two Hours		80.5
80% of Pull at Reduced Engine Speed—Two Hours		78.0
Bystander in 11th (3HL) gear		84.0

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
46.35 (34.51)	3450 (15.34)	5.02 (8.08)	2001	4.45	3.534 (13.378)	0.553 (0.334)	13.10 (2.580)	187 (86.1)	62 (16.7)	78 (25.5)	28.82 (97.30)
MAXIMUM POWER IN SELECTED GEARS											
35.87 (26.73)	7986 (35.43)	1.80 (2.73)	2061	14.81	3rd (3LL) Gear			177 (80.6)	60 (15.6)	64 (17.8)	28.78 (97.19)
45.11 (34.58)	4105 (18.26)	4.21 (6.78)	1999	5.70	6th (3HL) Gear			181 (82.3)	60 (15.6)	67 (19.4)	28.81 (97.29)
47.13 (35.14)	3524 (15.67)	5.02 (8.07)	2000	4.42	7th (1LH) Gear			187 (86.1)	62 (16.7)	77 (25.0)	28.82 (97.32)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.9-30; 6; 16 (125)	Two 18.9-30; 6; 16 (125)
Ballast	—Liquid (each)	200 lb (91 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.2-24; 6; 36 (180)	Two 11.2-24; 6; 36 (180)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	40 lb (18 kg)	None
Height of Drawbar		17 in (430 mm)	17 in (430 mm)
Basic Weight with Operator—Rear		5080 lb (2647 kg)	5480 lb (2483 kg)
—Front		3320 lb (1506 kg)	3040 lb (1470 kg)
—Total		9800 lb (4173 kg)	8790 lb (3953 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa)	3000	20680
Location	trailer tipping connection	
Hydraulic oil temperature °F (°C)	178	81
Location	sump	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	no		
CATEGORY	II		*not measured
LOAD lbs (kg)	5992	1629	
TIME sec	2.51		
HITCH POINT MOVEMENT in (mm)			
Lowest position	12.6	321	
Top of timed range	36.6	930	
Highest position	36.9	937	
LOAD CG MOVEMENT in (mm)			
Lowest position	11.9	302	
Top of timed range	40.2	1021	
Highest position	40.4	1027	

*Implement load capacity for transport purposes not specified by manufacturer.

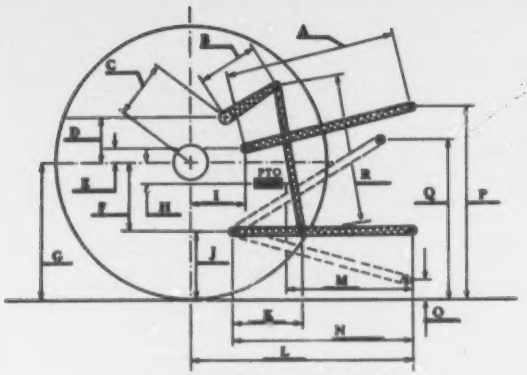
REPAIRS and ADJUSTMENTS: An auxiliary hydraulic valve gasket was replaced after the limber up run.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 140°F *(63.4°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1538, November 26, 1984.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	28.6	726
B	10.5	267
C	11.9	302
D	9.2	234
E	8.1	206
F	8.4	213
G	26.9	683
H	5.0	127
I	7.3	185
J	18.5	470
K	19.8	503
L	36.7	933
M	27.4	696
N	38.0	965
O	8.0	203
P	37.5	953
Q	33.0	838
R	26.3	667

Massey Ferguson 670 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1539—MASSEY FERGUSON 690 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling coolant	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—627 rpm)								
65.08 (48.50)	2200	4.511 (17.075)	0.479 (0.291)	14.56 (2.868)	182 (83.3)	64 (17.7)	75 (23.9)	29.00 (97.93)
Standard Power Take-off Speed (540 rpm)—One Hour								
62.25 (46.42)	1895	4.012 (15.187)	0.450 (0.274)	15.51 (3.057)	185 (84.7)	63 (17.3)	75 (24.0)	29.00 (97.93)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
57.87 (43.13)	2281	3.991 (15.100)	0.481 (0.293)	14.50 (2.857)	175 (80.0)	63 (16.9)	75 (23.9)	....
0.00 (0.00)	2356	1.501 (5.681)	....	....	160 (71.1)	64 (17.8)	75 (23.6)	....
29.46 (21.90)	2323	2.565 (9.702)	0.607 (0.369)	11.49 (2.264)	164 (73.3)	63 (18.3)	75 (23.9)	....
60.21 (49.37)	2201	4.524 (17.125)	0.477 (0.290)	14.64 (2.883)	182 (83.1)	65 (18.3)	75 (23.9)	....
14.85 (11.08)	2342	1.951 (7.389)	0.907 (0.552)	7.69 (1.513)	163 (72.8)	65 (18.3)	75 (23.9)	....
45.85 (32.70)	2304	3.234 (12.241)	0.514 (0.313)	13.56 (2.671)	168 (75.6)	63 (18.3)	75 (23.9)	....
Av 56.57 Av (36.58)	2301	2.987 (11.194)	0.585 (0.355)	11.96 (2.356)	169 (76.0)	64 (18.0)	75 (23.8)	29.00 (97.94)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (N)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling coolant	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
53.36 (39.79)	4192 (18.65)	4.77 (7.68)	2200	0.47	4.444 (16.822)	0.581 (0.353)	12.01 (2.366)	182 (83.3)	67 (19.2)	76 (24.4)	28.73 (97.02)
75% of Full at Maximum Power—Two Hours 7th (1LH) Gear											
43.55 (32.47)	5230 (14.37)	5.06 (8.14)	2289	4.79	3.804 (13.984)	0.592 (0.360)	11.79 (2.322)	170 (76.4)	48 (8.7)	52 (11.3)	28.92 (97.32)
50% of Full at Maximum Power—Two Hours 7th (1LH) Gear											
29.84 (22.25)	2155 (9.58)	5.20 (8.36)	2318	3.45	3.029 (11.304)	0.710 (0.432)	9.82 (1.934)	170 (76.6)	39 (3.8)	45 (6.1)	29.18 (98.54)
50% of Full at Reduced Engine Speed—Two Hours 9th (2LH) Gear											
29.76 (22.19)	2155 (9.57)	5.18 (8.34)	1540	5.25	2.251 (8.519)	0.528 (0.321)	13.22 (2.605)	172 (77.3)	42 (5.5)	50 (9.7)	29.21 (98.62)
MAXIMUM POWER IN SELECTED GEARS											
45.09 (33.13)	7680 (34.03)	2.11 (3.40)	2278	14.65	4th (2HL) Gear			171 (76.9)	62 (16.7)	67 (19.4)	28.72 (96.98)
53.27 (39.72)	6658 (29.66)	3.06 (4.92)	2198	10.91	5th (3LL) Gear			179 (81.4)	63 (17.2)	68 (20.0)	28.72 (96.98)
53.54 (39.92)	4673 (22.12)	4.04 (6.50)	2290	7.83	6th (3HL) Gear			180 (82.2)	65 (17.2)	68 (20.0)	28.72 (96.98)
54.78 (40.85)	4306 (19.15)	4.77 (7.68)	2200	6.31	7th (1LH) Gear			180 (82.2)	66 (18.2)	70 (21.1)	28.73 (97.02)
53.19 (39.66)	3220 (14.32)	6.19 (9.97)	2190	4.87	8th (1HH) Gear			179 (81.7)	64 (17.8)	69 (20.6)	28.72 (96.98)
53.08 (39.58)	2711 (12.06)	7.34 (11.82)	2200	4.13	9th (2LH) Gear			179 (81.4)	64 (17.8)	69 (20.6)	28.73 (97.02)
50.25 (37.45)	1987 (8.84)	9.48 (15.26)	2201	3.04	10th (2HH) Gear			178 (81.1)	66 (18.3)	70 (21.1)	28.73 (97.02)

Department of Agricultural Engineering

Dates of Test: September 14-25, 1984

Manufacturer: MASSEY FERGUSON S.A. Avenue Blaise Pascal, 60026 Beauvais, France

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity** conversed to 60/60° F (15/15°C) 0.8378 **Fuel weight** 6.976 lbs/gal (0.836 kg/l) **Oil** SAE 15W-40 **API service classification** SE, CC, CD **To motor** 1.850 gal (7.003 l) **Drained from motor** 1.605 gal (6.076 l) **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 41.5 hours.

ENGINE: **Make** Perkins Diesel **Type** four cylinder vertical **Serial No.** LF31109U951557K **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 3.975" × 5.0" (101 mm × 127 mm) **Compression ratio** 16 to 1 **Displacement** 248 cu in (4065 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission fluid, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** △690RU K325022△ **Tread width** rear 56" (1422 mm) to 90" (2286 mm) front 63" (1598 mm) to 71" (1812 mm) **Wheel base** 90" (2286 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 40.2" (1020 mm) Vertical distance above roadway 38.5" (978 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.2 (2.0) second 1.6 (2.6) third 1.9 (3.0) fourth 2.4 (3.9) fifth 3.5 (5.6) sixth 4.4 (7.1) seventh 5.2 (8.3) eighth 6.6 (10.6) ninth 7.7 (12.4) tenth 9.9 (15.9) eleventh 14.2 (22.8) twelfth 18.1 (29.1) reverse 1.9 (3.0), 2.4 (3.9), 7.7 (12.4), 9.9 (15.9) **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 165.5" (4.20 m) left 165" (4.19 m) (on concrete surface without brake) right 194.5" (4.94 m) left 195" (4.95 m) **Turning space diameter** (on concrete surface with brake applied) right 345" (8.76 m) left 344" (8.74 m) (on concrete surface without brake) right 403" (10.24 m) left 404" (10.26 m) **Power take-off** 540 rpm at 1865 engine rpm and 1000 rpm at 1900 engine rpm **Unladen tractor mass** 7845 lb (3558 kg).

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (1LH) GEAR

Crankshaft Speed rpm	2200	1982	1736	1538	1313	1086	874
Pull—lbs (kN)	4505 (19.13)	4861 (20.73)	4960 (22.10)	5221 (23.22)	5436 (24.18)	5488 (24.32)	5253 (23.29)
Increase in Pull %	0	8	10	21	26	27	22
Power—Hp (kW)	54.78 (40.85)	53.09 (39.59)	49.87 (37.29)	43.64 (34.60)	40.99 (30.12)	33.85 (25.24)	26.98 (19.37)
Speed—Mph (km/h)	4.77 (7.68)	4.27 (6.87)	3.76 (6.06)	3.30 (5.28)	2.79 (4.48)	2.32 (3.74)	1.78 (2.8[illegible])
Slip %	0.51	7.27	7.52	8.15	8.52	8.84	8.27

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	80.5	81.0
75% of Full at Maximum Power—Ten Hours		80.0
50% of Full at Maximum Power—Two Hours		81.0
50% of Full at Reduced Engine Speed—Two Hours		77.0
Bystander in 12th (3HH) gear		86.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (N)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling coolant	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
52.58 (39.04)	3960 (17.61)	4.96 (7.98)	2200	4.87	4.437 (16.795)	0.501 (0.339)	11.81 (2.324)	185 (85.9)	67 (19.4)	77 (24.7)	28.73 (97.02)
MAXIMUM POWER IN SELECTED GEARS											
42.54 (31.72)	9437 (41.98)	1.80 (2.72)	2284	14.79	3rd (2LL) Gear			180 (76.1)	61 (16.1)	66 (18.9)	28.71 (96.95)
52.92 (39.46)	4008 (17.83)	4.95 (7.97)	2190	5.08	7th (1LH) Gear			180 (81.9)	65 (18.3)	70 (21.1)	28.75 (97.08)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-30; 6; 16 (110)	Two 18.4-30; 6; 16 (110)
Ballast	—Liquid (each)	1080 lb (494 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 13.6-24; 6; 22 (150)	Two 13.6-24; 6; 22 (150)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	47 lb (22 kg)	None
Height of Drawbar		17 in (430 mm)	17 in (430 mm)
Basic Weight with Operator	—Rear	8700 lb (3959 kg)	6320 lb (2876 kg)
	—Front	3105 lb (1413 kg)	1565 lb (1188 kg)
	—Total	10295 lb (4679 kg)	9885 lb (3438 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa)	3180	21370
Location	trailer tipping connection	
Hydraulic oil temperature °F (°C)	180	87
Location	sump	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	no		
CATEGORY	II		*not measured
LOAD lbs (kg)	3098	1632	
TIME sec	2.02		
HITCH POINT MOVEMENT in (mm)			
Lowest position	12.6	321	
Top of timed range	36.5	930	
Highest position	37.1	943	
LOAD CG MOVEMENT in (mm)			
Lowest position	11.6	293	
Top of timed range	40.6	1032	
Highest position	41.1	1043	

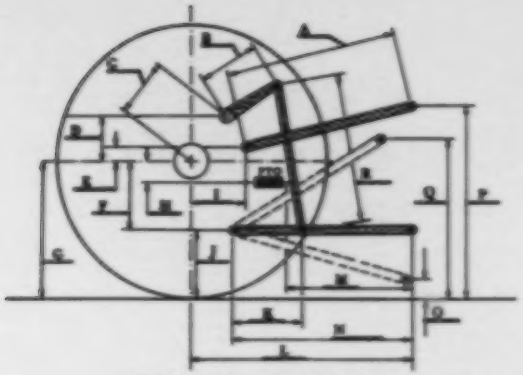
*Implement load capacity for transport purposes not specified by manufacturer.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 155°F (67.0°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1539, December 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	29.5	749
B	10.5	267
C	11.9	302
D	8.3	211
E	7.2	183
F	9.3	236
G	27.6	701
H	5.9	150
I	7.3	185
J	18.3	465
K	19.8	503
L	36.8	933
M	27.4	696
N	38.0	965
O	8.0	203
P	37.3	947
Q	34.5	876
R	26.4	671

Massey Ferguson 690 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1540—MASSEY FERGUSON 698 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—640 rpm)								
78.83 (58.79)	2000	5.540 (20.212)	0.472 (0.287)	14.76 (2.908)	184 (84.7)	61 (16.2)	75 (23.9)	29.19 (98.57)
Standard Power Take-off Speed (540 rpm)—One Hour								
74.41 (55.49)	1687	4.677 (17.704)	0.438 (0.267)	15.91 (3.134)	184 (84.4)	62 (16.5)	75 (23.9)	29.22 (98.67)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
70.34 (52.45)	2100	4.864 (18.407)	0.484 (0.294)	14.40 (2.837)	183 (83.9)	62 (16.7)	75 (23.6)	....
0.00 (0.00)	2150	1.936 (7.330)	....	....	179 (81.7)	61 (16.1)	75 (23.6)	....
35.40 (26.40)	2113	3.042 (11.516)	0.599 (0.364)	11.64 (2.293)	180 (82.2)	62 (16.4)	75 (23.6)	....
79.34 (59.17)	2000	5.527 (20.164)	0.488 (0.285)	14.89 (2.934)	185 (85.0)	61 (16.1)	75 (23.9)	....
17.94 (13.38)	2133	2.425 (9.178)	0.947 (0.576)	7.36 (1.451)	179 (81.7)	61 (16.1)	75 (23.6)	....
52.86 (39.42)	2106	3.877 (14.675)	0.511 (0.311)	13.63 (2.686)	181 (82.8)	61 (16.1)	76 (24.2)	....
Av 42.04 (31.80)	2100	3.981 (13.537)	0.506 (0.336)	11.91 (2.345)	181 (82.9)	61 (16.3)	75 (23.8)	29.25 (98.76)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Coolant med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
66.72 (49.75)	5470 (24.33)	4.57 (7.36)	2009	6.86	5.314 (20.116)	0.555 (0.338)	12.55 (2.473)	185 (85.0)	61 (15.8)	68 (19.7)	29.12 (98.53)
75% of Pull at Maximum Power—Ten Hours 7th (1LH) Gear											
55.80 (41.16)	4219 (18.77)	4.91 (7.90)	2105	5.10	4.511 (17.076)	0.570 (0.347)	12.24 (2.411)	184 (84.6)	59 (14.7)	68 (20.1)	29.12 (98.52)
80% of Pull at Maximum Power—Two Hours 7th (1LH) Gear											
57.98 (28.32)	2814 (12.52)	5.06 (8.15)	2132	3.36	5.586 (13.574)	0.658 (0.400)	10.59 (2.067)	183 (83.9)	51 (10.3)	66 (18.9)	29.28 (98.87)
80% of Pull at Reduced Engine Speed—Two Hours 9th (2LH) Gear											
37.92 (28.28)	2815 (12.51)	5.05 (8.13)	1414	2.96	2.575 (9.746)	0.475 (0.288)	14.73 (2.901)	184 (84.2)	69 (20.3)	86 (30.0)	29.05 (98.08)
MAXIMUM POWER IN SELECTED GEARS											
48.12 (33.68)	8707 (38.73)	2.07 (3.34)	2115	14.75	4th (2HL) Gear			183 (83.9)	55 (12.8)	57 (13.9)	29.11 (98.50)
63.86 (47.62)	8335 (37.07)	2.87 (4.62)	1990	12.80	5th (3LL) Gear			185 (85.0)	56 (13.3)	59 (15.0)	29.12 (98.53)
66.38 (49.50)	6484 (28.84)	3.84 (6.18)	2000	8.95	6th (3HL) Gear			185 (85.0)	50 (10.0)	65 (18.3)	29.35 (99.11)
68.38 (50.99)	5623 (25.01)	4.56 (7.34)	2001	7.23	7th (1LH) Gear			186 (85.3)	51 (10.6)	67 (19.4)	29.31 (98.98)
67.78 (50.55)	4279 (19.03)	5.94 (9.56)	2000	5.17	8th (1HH) Gear			185 (85.0)	51 (10.6)	66 (18.9)	29.34 (99.08)
67.91 (50.64)	3619 (16.10)	7.04 (11.33)	1999	4.54	9th (2LH) Gear			185 (85.0)	50 (10.0)	65 (18.3)	29.35 (99.11)
68.03 (99.24)	2725 (12.11)	9.09 (14.64)	2001	3.52	10th (2HH) Gear			186 (85.3)	51 (10.6)	66 (18.9)	29.34 (99.08)

Department of Agricultural Engineering

Dates of Test: September 11-19, 1984

Manufacturer: MASSEY FERGUSON S.A. Avenue Blaise Pascal, 60026 Beauvais, France

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F** *(15/15°C)* 0.8374 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, CC, CD **To motor** 2.558 gal *(9.684 l)* **Drained from motor** 2.195 gal *(8.310 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 59.5 hours.

ENGINE: **Make** Perkins Diesel **Type** four cylinder vertical **Serial No.** ND51118U727784K **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.5" × 5.0" *(114.4 mm × 127 mm)* **Compression ratio** 17.5 to 1 **Displacement** 318 cu in *(5212 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** △698RUK250090△ **Tread width** rear 60" *(1524 mm)* to 96" *(2438 mm)* front 66" *(1682 mm)* to 74" *(1886 mm)* **Wheel base** 96" *(2438 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 36.2" *(920 mm)* Vertical distance above roadway 41.5" *(1054 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.2 *(2.0)* second 1.6 *(2.5)* third 1.8 *(3.0)* fourth 2.3 *(3.7)* fifth 3.4 *(5.4)* sixth 4.3 *(6.9)* seventh 5.0 *(8.1)* eighth 6.4 *(10.3)* ninth 7.5 *(12.1)* tenth 9.6 *(15.5)* eleventh 13.8 *(22.2)* twelfth 17.6 *(28.3)* reverse 1.8 *(2.9)*, 2.5 *(3.7)*, 7.5 *(12.1)*, 9.6 *(15.5)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 170.5" *(4.33 m)* left 173" *(4.39 m)* (on concrete surface without brake) right 199.5" *(5.07 m)* left 203" *(5.16 m)* **Turning space diameter** (on concrete surface with brake applied) right 356" *(9.04 m)* left 361" *(9.17 m)* (on concrete surface without brake) right 414" *(10.52 m)* left 421" *(10.69 m)* **Power take-off** 540 rpm at 1687 engine rpm and 1000 rpm at 1692 engine rpm **Unladen tractor mass** 9770 lb *(4432 kg)*.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (1LH) GEAR

Crankshaft Speed rpm	2001	1800	1607	1390	1194	994
Pull—lbs (kN)	5925 (25.82)	6077 (27.05)	6436 (28.63)	6672 (29.68)	6868 (30.53)	6760 (30.11)
Increase in Pull %	0	8	14	19	22	20
Power—Hp (kW)	68.38 (50.99)	65.91 (49.15)	61.85 (46.12)	55.46 (41.35)	48.38 (36.08)	38.81 (29.69)
Speed—Mph (km/h)	4.56 (7.34)	4.07 (6.55)	3.60 (5.80)	3.12 (5.02)	2.84 (4.25)	2.21 (3.55)
Slip %	7.25	7.89	8.81	9.52	9.95	9.70

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	82.5	82.5
75% of Pull at Maximum Power—Ten Hours		81.5
80% of Pull at Maximum Power—Two Hours		81.0
80% of Pull at Reduced Engine Speed—Two Hours		79.5
Bystander in 12th (3HH) gear		87.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Coolant med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
68.83 (99.09)	5214 (23.19)	4.75 (7.62)	2000	5.28	5.300 (20.062)	0.561 (0.341)	12.42 (2.447)	187 (85.8)	66 (18.6)	79 (26.1)	29.09 (98.22)
MAXIMUM POWER IN SELECTED GEARS											
50.54 (44.25)	10758 (47.89)	2.07 (3.33)	2081	14.85	4th (2HL) Gear			184 (84.4)	54 (12.2)	56 (13.3)	29.11 (98.50)
67.89 (50.63)	5400 (24.02)	4.72 (7.59)	2000	5.57	7th (1LH) Gear			186 (85.3)	51 (10.6)	67 (19.4)	29.32 (99.01)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	1000 lb (476 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 14.9-34; 6; 20 (140)	Two 14.9-34; 6; 20 (140)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	43 lb (19 kg)	None
Height of Drawbar		17 in (430 mm)	17 in (430 mm)
Static Weight with Operator	—Rear	8330 lb (3780 kg)	6250 lb (2835 kg)
	—Front	5775 lb (2712 kg)	3680 lb (1674 kg)
	—Total	12125 lb (5500 kg)	9910 lb (4509 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kpa) Location	3100 trailer tipping connection	21370
Hydraulic oil temperature °F (°C) Location	167 sump	86

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH CATEGORY	no II		*not measured
LOAD lbs (kg) TIME sec	4428 6.61	2009	
HITCH POINT MOVEMENT in (mm)			
Lowest position	13.1	333	
Top of timed range	37.1	943	
Highest position	38.3	972	
LOAD LOG MOVEMENT in (mm)			
Lowest position	12.1	306	
Top of timed range	39.4	1002	
Highest position	41.1	1045	

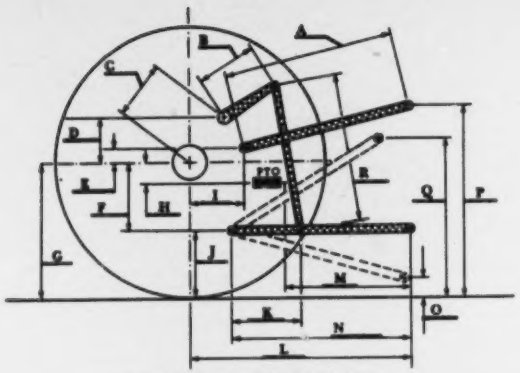
*Implement load capacity for transport purposes not specified by manufacturer.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 137°F *(58.1°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1540, December 3, 1984.

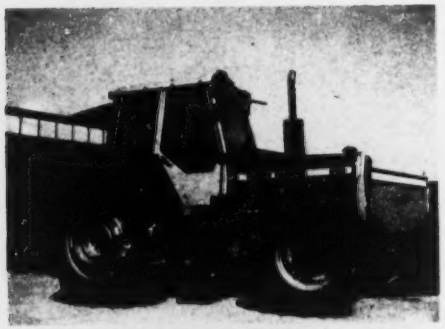
LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	31.4	797
B	10.5	267
C	11.9	302
D	9.2	234
E	8.1	206
F	8.4	213
G	29.2	740
H	5.0	127
I	7.3	185
J	20.8	527
K	21.5	546
L	38.8	984
M	23.4	594
N	40.0	1016
O	8.0	203
P	39.8	1010
Q	33.1	841
R	27.8	705



Massey Ferguson 698 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1541—MASSEY FERGUSON 699 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
Rated Engine Speed—Two Hours (PTO Speed—627 rpm)								
85.79 (63.98)	2200	5.346 (20.233)	0.454 (0.264)	16.05 (3.162)	178 (81.1)	64 (17.6)	75 (24.1)	29.00 (97.93)
Standard Power Take-off Speed (540 rpm)—One Hour								
78.00 (58.17)	1894	4.598 (17.405)	0.411 (0.250)	16.96 (3.342)	177 (80.5)	65 (18.3)	74 (23.4)	29.02 (98.00)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
76.19 (56.82)	2290	4.875 (18.454)	0.446 (0.271)	15.65 (3.079)	176 (80.0)	69 (20.3)	79 (26.1)	....
0.00 (0.00)	2589	1.812 (6.857)	....	....	171 (76.9)	64 (17.8)	76 (24.2)	....
38.75 (28.90)	2357	3.197 (12.102)	0.575 (0.350)	12.12 (2.388)	172 (77.8)	64 (17.8)	75 (23.4)	....
85.71 (63.91)	2201	5.536 (20.197)	0.434 (0.264)	16.06 (3.164)	178 (81.1)	67 (19.2)	78 (25.3)	....
19.58 (14.60)	2564	2.580 (9.007)	0.847 (0.515)	8.25 (1.621)	172 (77.3)	66 (18.9)	76 (24.2)	....
57.50 (42.88)	2313	3.989 (15.099)	0.484 (0.294)	14.42 (2.840)	174 (78.6)	65 (18.1)	76 (24.4)	....
Av 46.29 Av (34.52)	2317	3.398 (13.619)	0.542 (0.330)	12.87 (2.534)	174 (78.7)	66 (18.7)	76 (24.6)	29.03 (98.01)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
70.52 (52.59)	5632 (25.05)	4.70 (7.56)	2199	7.42	5.221 (19.763)	0.518 (0.316)	13.51 (2.661)	174 (78.9)	40 (4.2)	49 (9.2)	29.55 (99.03)
75% of Pull at Maximum Power—Ten Hours 7th (1LH) Gear											
57.76 (43.07)	4296 (19.11)	5.04 (8.11)	2511	5.34	4.563 (17.271)	0.551 (0.335)	12.66 (2.494)	174 (78.7)	45 (7.1)	50 (9.7)	29.20 (98.59)
50% of Pull at Maximum Power—Two Hours 7th (1LH) Gear											
39.59 (29.52)	2864 (12.74)	5.18 (8.34)	2535	3.78	3.722 (14.089)	0.655 (0.399)	10.64 (2.095)	172 (77.8)	38 (3.1)	44 (6.4)	29.43 (99.38)
50% of Pull at Reduced Engine Speed—Two Hours 9th (2LH) Gear											
39.82 (29.54)	2865 (12.74)	5.19 (8.35)	1558	3.68	2.969 (10.859)	0.505 (0.307)	13.81 (2.720)	172 (77.8)	40 (4.2)	50 (9.7)	29.42 (99.33)
MAXIMUM POWER IN SELECTED GEARS											
50.64 (37.76)	8718 (38.78)	2.18 (3.51)	2307	12.22	4th (2HL) Gear			173 (78.1)	38 (3.3)	45 (7.2)	29.42 (99.35)
66.83 (51.33)	8606 (38.28)	3.00 (4.83)	2201	12.10	5th (3LL) Gear			174 (78.6)	38 (3.3)	45 (7.2)	29.42 (99.35)
69.41 (51.74)	6571 (29.23)	3.96 (6.38)	2200	8.70	6th (3HL) Gear			174 (78.9)	39 (3.9)	48 (8.9)	29.38 (99.21)
71.71 (53.47)	5728 (25.48)	4.69 (7.56)	2200	7.52	7th (1LH) Gear			174 (78.9)	40 (4.4)	49 (9.4)	29.31 (98.98)
69.57 (51.88)	4286 (19.06)	6.09 (9.80)	2199	5.78	8th (1HH) Gear			174 (78.9)	39 (3.9)	48 (8.9)	29.38 (99.21)
69.76 (52.02)	3612 (16.07)	7.24 (11.66)	2200	4.88	9th (2LH) Gear			174 (78.9)	39 (3.9)	48 (8.9)	29.36 (99.14)
66.45 (49.55)	2673 (11.89)	9.32 (15.01)	2201	3.82	10th (2HH) Gear			174 (78.9)	39 (3.9)	48 (8.9)	29.36 (99.14)

Department of Agricultural Engineering

Dates of Test: September 6-28, 1984

Manufacturer: MASSEY FERGUSON S.A. Avenue Blaise Pascal, 60026 Beauvais, France

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.8 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F** *(15/15°C)* 0.8374 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil** SAE 15W-40 **API service classification** SE, SF, CC, CD **To motor** 3.626 gal *(13.727 l)* **Drained from motor** 3.247 gal *(12.293 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 51.5 hours.

ENGINE: Make Perkins Diesel **Type** six cylinder vertical **Serial No.** TWU708782K **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 3.875" × 5.0" *(98.4 mm × 127 mm)* **Compression ratio** 16.0 to 1 **Displacement** 354 cu in *(5802 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type front wheel assist **Serial No.** △699RUT105043△ **Tread width** rear 60" *(1524 mm)* to 96" *(2438 mm)* front 66" *(1682 mm)* to 74" *(1886 mm)* **Wheel base** 101.4" *(2576 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 39.0" *(990 mm)* Vertical distance above roadway 41.5" *(1054 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.2 *(2.0)* second 1.6 *(2.5)* third 1.8 *(2.9)* fourth 2.3 *(3.7)* fifth 3.4 *(5.4)* sixth 4.3 *(6.9)* seventh 5.0 *(8.0)* eighth 6.4 *(10.2)* ninth 7.5 *(12.1)* tenth 9.5 *(15.3)* eleventh 13.8 *(22.1)* twelfth 17.5 *(28.2)* reverse 1.8 *(2.9)*, 2.3 *(3.7)*, 7.5 *(12.1)*, 9.5 *(15.3)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 180.5" *(4.58 m)* left 183" *(4.65 m)* (on concrete surface without brake) right 208.5" *(5.30 m)* left 213.5" *(5.42 m)* **Turning space diameter** (on concrete surface with brake applied) right 376" *(9.55 m)* left 381" *(9.68 m)* (on concrete surface without brake) right 432" *(10.97 m)* left 442" *(11.23 m)* **Power take-off** 540 rpm at 1894 engine rpm and 1000 rpm at 1900 engine rpm **Unladen tractor mass** 10150 lb *(4604 kg)*.

LUGGING AB[illegible] IN 7th (1LH) GEAR

Crankshaft Speed rpm	2200	1981	1755	1542	1318	1094
Pull—lbs (kN)	5728 (25.48)	5950 (26.47)	6179 (27.49)	6315 (28.09)	6519 (29.00)	6386 (28.41)
Increase in Pull %	0	4	8	10	14	11
Power—Hp (kW)	71.71 (53.47)	66.81 (49.82)	61.27 (45.69)	54.90 (40.94)	48.29 (36.01)	39.55 (29.50)
Speed—Mph (km/h)	4.69 (7.56)	4.21 (6.78)	3.72 (5.98)	3.26 (5.25)	2.78 (4.47)	2.31 (3.72)
Slip %	7.52	7.66	8.05	8.51	8.57	8.44

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	82.0	81.5
75% of Pull at Maximum Power—Ten Hours		82.5
50% of Pull at Maximum Power—Two Hours		82.5
50% of Pull at Reduced Engine Speed—Two Hours		79.5
Bystander in 12th (5HH) gear		88.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (1LH) Gear											
69.33 (51.70)	5326 (23.70)	4.88 (7.85)	2200	5.75	5.207 (19.709)	0.524 (0.318)	13.32 (2.623)	175 (79.2)	40 (4.4)	49 (9.4)	29.28 (98.87)
MAXIMUM POWER IN SELECTED GEARS											
65.81 (49.08)	11620 (51.69)	2.12 (3.42)	2275	14.91	4th (2HL) Gear			175 (78.3)	38 (3.3)	45 (7.2)	29.42 (99.33)
70.36 (52.47)	5403 (24.03)	4.88 (7.86)	2201	5.82	7th (1LH) Gear			175 (79.4)	40 (4.4)	49 (9.4)	29.30 (98.94)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	1050 lb (476 kg)	None
	—Cast Iron (each)	210 lb (95 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 14.9-24; 6; 2[illegible] (140)	Two 14.9-24; 6; 20 (140)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	45 lb (21 kg)	None
Height of Drawbar		17 in (430 mm)	17 in (430 mm)
Static Weight with Operator	—Rear	8945 lb (4057 kg)	6425 lb (2914 kg)
	—Front	3990 lb (1810 kg)	3900 lb (1769 kg)
	—Total	12935 lb (5867 kg)	10325 lb (4683 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	3100	21370
Location	trailer tipping connection	
Hydraulic oil temperature °F (°C)	195	89
Location	sump	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH CATEGORY	no II		*not measured
LOAD lbs (kg)	5212	2364	
TIME sec	5.05		
HITCH POINT MOVEMENT in. (mm)			
Lowest position	12.6	321	
Top of timed range	36.8	933	
Highest position	37.4	949	
LOAD CG MOVEMENT in. (mm)			
Lowest position	11.2	284	
Top of timed range	39.0	991	
Highest position	39.8	1011	

*Implement load capacity for transport purposes not specified by manufacturer.

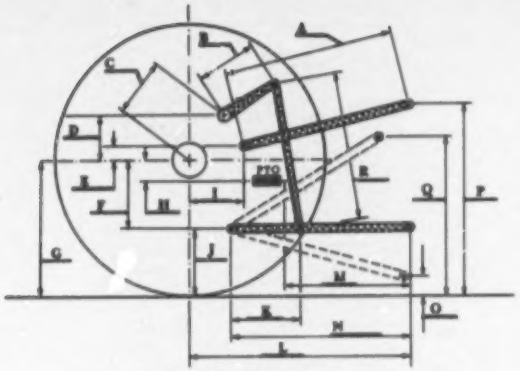
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 151°F *(66.4°C)*. Seven gears were chosen between tire tangential pull limit and 15% slip. During the warmup on the drawbar, a wrong gear ratio was discovered. The gear set was replaced and tests continued.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1541, December 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	31.8	*806*
B	10.5	*267*
C	11.9	*302*
D	9.2	*234*
E	8.1	*206*
F	8.4	*213*
G	28.8	*731*
H	5.0	*127*
I	7.3	*183*
J	20.4	*518*
K	21.5	*546*
L	38.8	*984*
M	23.4	*594*
N	40.0	*1016*
O	8.0	*203*
P	39.4	*1000*
Q	33.5	*851*
R	27.8	*705*

Massey Ferguson 699 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1511
MASSEY FERGUSON 3505 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crankshaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1148 rpm)								
91.50 (68.24)	2400	6.598 (24.218)	0.490 (0.298)	14.30 (3.818)	185 (85.0)	57 (13.8)	75 (23.8)	28.84 (97.60)
Standard Power Take-off Speed (1000 rpm)—One Hour								
87.47 (65.22)	2091	5.632 (21.317)	0.451 (0.274)	15.55 (3.060)	185 (85.0)	57 (13.9)	75 (23.9)	28.85 (97.35)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
81.29 (60.62)	2500	5.832 (22.076)	0.502 (0.306)	13.94 (2.746)	185 (85.0)	57 (13.9)	75 (23.9)	....
0.00 (0.00)	2617	2.168 (8.208)	....	....	174 (78.9)	57 (13.6)	74 (23.3)	....
41.02 (31.04)	2571	3.882 (14.696)	0.863 (0.997)	10.72 (2.112)	177 (80.6)	58 (14.2)	74 (23.3)	....
92.18 (68.74)	2500	6.456 (24.363)	0.489 (0.297)	14.52 (2.821)	185 (85.0)	58 (14.4)	74 (23.3)	....
21.05 (15.68)	2596	3.047 (11.535)	1.014 (0.617)	6.90 (1.360)	175 (79.4)	59 (15.0)	76 (24.4)	....
61.71 (46.02)	2539	4.761 (18.021)	0.540 (0.329)	12.96 (2.554)	179 (81.7)	59 (15.0)	76 (24.4)	....
Av 48.84 (37.82)	2338	4.354 (16.483)	0.614 (0.374)	11.40 (2.246)	179 (81.5)	58 (14.4)	75 (23.8)	28.84 (97.59)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (5H) Gear											
73.43 (54.76)	4986 (21.73)	5.54 (9.07)	2400	6.60	6.556 (24.061)	0.606 (0.369)	11.55 (2.276)	188 (86.6)	55 (11.4)	64 (17.5)	28.69 (96.80)
75% of Pull at Maximum Power—Ten Hours 10th (5H) Gear											
59.72 (44.53)	3707 (16.49)	6.04 (9.72)	2519	4.58	5.479 (20.741)	0.642 (0.391)	10.90 (2.147)	186 (85.6)	57 (14.1)	69 (20.5)	28.40 (95.92)
50% of Pull at Maximum Power—Two Hours 10th (5H) Gear											
40.96 (30.53)	2471 (10.99)	6.22 (10.00)	2555	3.19	4.477 (16.870)	0.702 (0.463)	9.19 (1.811)	184 (84.2)	57 (19.2)	76 (24.2)	28.50 (95.55)
30% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
40.96 (30.54)	2471 (10.99)	6.22 (10.00)	1585	2.97	3.192 (12.083)	0.548 (0.333)	12.83 (2.527)	185 (84.7)	67 (19.4)	80 (26.4)	28.29 (95.51)
MAXIMUM POWER IN SELECTED GEARS											
55.84 (41.64)	8344 (37.11)	2.51 (4.04)	2522	14.82	5th (5L) Gear			184 (84.4)	65 (18.3)	70 (21.1)	28.30 (95.76)
69.39 (51.73)	8109 (36.07)	3.21 (5.16)	2398	14.08	6th (5H) Gear			188 (86.9)	62 (16.7)	69 (20.6)	28.30 (95.76)
71.41 (53.23)	7999 (35.58)	3.35 (5.39)	2397	13.83	7th (4L) Gear			189 (86.9)	64 (17.8)	71 (21.7)	28.30 (95.76)
74.31 (55.41)	6661 (30.52)	4.06 (6.54)	2398	10.11	8th (5L) Gear			186 (85.3)	50 (10.0)	57 (13.9)	28.67 (96.81)
72.10 (53.83)	5647 (25.12)	4.79 (7.71)	2400	7.86	9th (4H) Gear			185 (85.0)	49 (9.4)	56 (13.3)	28.67 (96.81)
74.35 (55.44)	4942 (21.98)	5.54 (9.08)	2399	6.20	10th (5H) Gear			185 (85.0)	49 (9.4)	55 (12.8)	28.66 (96.78)
74.79 (55.77)	4296 (19.08)	6.34 (10.32)	2399	5.43	11th (6L) Gear			185 (85.0)	50 (10.0)	59 (13.0)	28.68 (96.83)
70.48 (52.56)	2970 (13.21)	8.90 (14.32)	2401	5.68	12th (6H) Gear			185 (84.7)	51 (10.6)	60 (15.6)	28.69 (96.88)

Department of Agricultural Engineering

Dates of Test: April 17-27, 1984

Manufacturer: MASSEY FERGUSON S.A. RN 188 LA Boursidiere-92357 LePlessis, Robinson, France

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8408 **Fuel weight** 7.001 lbs/gal *(0.839 kg/l)* **Oil SAE** 20-20W **API service classification** SE, CC, CD **To motor** 3.678 gal *(13.923 l)* **Drained from motor** 3.098 gal *(11.729 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 46.0 hours.

ENGINE: Make Perkins Diesel **Type** six cylinder vertical **Serial No.** TW51040U709563K **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875" × 5" *(98.4 mm × 127 mm)* **Compression ratio** 16 to 1 **Displacement** 354 cu in *(5798 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type front wheel assist **Serial No.** A3505RWK522215A **Tread width** 65.8" *(1620 mm)* to 96.9" *(2460 mm)* front 63" *(1600 mm)* to 81.8" *(2070 mm)* **Wheel base** 107.5" *(2726 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 38.0" *(965 mm)* Vertical distance above roadway 40.7" *(1033 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.3 *(2.1)* second 1.8 *(2.8)* third 2.0 *(3.2)* fourth 2.7 *(4.4)* fifth 2.8 *(4.6)* sixth 3.8 *(6.1)* seventh 3.9 *(6.3)* eighth 4.6 *(7.4)* ninth 5.3 *(8.5)* tenth 6.1 *(9.8)* eleventh 7.0 *(11.3)* twelfth 9.4 *(15.1)* thirteenth 9.8 *(15.8)* fourteenth 13.1 *(21.1)* fifteenth 13.6 *(22.0)* sixteenth 18.2 *(29.3)* reverse 1.4 *(2.3)*, 1.9 *(3.1)*, 2.2 *(3.6)*, 3.0 *(4.8)*, 3.1 *(5.0)*, 4.1 *(6.7)*, 4.3 *(6.9)*, 5.0 *(8.1)*, 5.8 *(9.3)*, 6.7 *(10.8)*, 7.7 *(12.4)*, 10.2 *(16.3)* **Clutch** single dry disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 194.5" *(4.94 m)* left 187" *(4.75 m)* (on concrete surface without brake) right 228" *(5.79 m)* left 222" *(5.64 m)* **Turning space diameter** (on concrete surface with brake applied) right 405" *(10.28 m)* left 391" *(9.93 m)* (on concrete surface without brake) right 471" *(11.96 m)* left 439" *(11.66 m)* **Power take-off** 540 rpm at 1992 engine rpm and 1000 rpm at 2091 engine rpm.

LUGGING ABILITY IN 10th (5H) GEAR

Crankshaft Speed rpm	2399	2155	1910	1670	1441	1192	981
Pull—lbs (kN)	4942 (21.98)	5353 (23.80)	5605 (25.11)	5986 (26.74)	5973 (26.77)	5986 (26.88)	5570 (24.97)
Increase in Pull %	0	8	13	21	21	21	13
Power—Hp (kW)	74.35 (55.44)	71.57 (53.37)	66.50 (49.64)	61.54 (45.89)	52.96 (39.49)	43.96 (32.78)	32.81 (24.47)
Speed—Mph (km/h)	5.84 (9.08)	5.00 (8.10)	4.44 (7.14)	3.87 (6.23)	3.33 (5.35)	2.75 (4.43)	2.21 (3.55)
Slip %	6.20	7.08	7.51	8.25	8.09	8.25	7.66

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	81.0	80.0
75% of Pull at Maximum Power—Ten Hours		81.5
50% of Pull at Maximum Power—Two Hours		80.5
30% of Pull at Reduced Engine Speed—Two Hours		77.0
Bystander in 15th (8L) gear		90.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (5H) Gear											
74.18 (55.32)	4702 (21.31)	5.81 (9.34)	2399	4.59	6.338 (23.953)	0.597 (0.363)	11.72 (2.309)	188 (86.7)	54 (12.2)	68 (19.7)	28.67 (96.81)
MAXIMUM POWER IN SELECTED GEARS											
70.26 (52.39)	10639 (47.32)	2.48 (3.99)	2470	14.85	5th (5L) Gear			188 (86.4)	65 (18.3)	70 (21.1)	28.30 (95.76)
76.84 (57.30)	6792 (30.21)	4.24 (6.83)	2400	7.04	8th (5L) Gear			187 (85.8)	50 (10.0)	58 (14.4)	28.68 (96.85)
75.55 (56.33)	4977 (21.69)	5.81 (9.33)	2400	4.47	10th (5H) Gear			185 (84.7)	48 (8.9)	54 (12.2)	28.66 (96.78)
73.44 (54.25)	4212 (18.73)	6.72 (10.81)	2401	3.92	11th (6L) Gear			185 (85.0)	50 (10.0)	59 (15.0)	28.69 (96.88)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-38, 8, 18 (125)	Two 18.4-38, 8, 18 (125)
Ballast	—Liquid (each)	None	None
	—Tests equip. (each)	82 lb (37 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 13.6-28, 8, 20 (140)	Two 13.6-28, 8, 20 (140)
Ballast	—Liquid (each)	None	None
	—Tests equip. (each)	40 lb (22 kg)	None
Height of Drawbar		24 in (610 mm)	24 in (610 mm)
Static Weight with Operator	—Rear	8560 lb (3896 kg)	8425 lb (3821 kg)
	—Front	4605 lb (2089 kg)	4510 lb (2046 kg)
	—Total	13106 lb (5985 kg)	12995 lb (5867 kg)

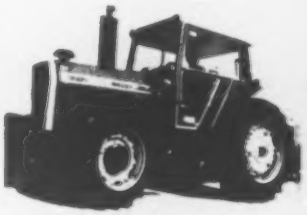
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 133°F (56.2°C). Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection, cylinders 2, 3, 4 and 5 were found to have several deep scratches.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1511, June 18, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson 3505 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1512
MASSEY FERGUSON 3525 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1148 rpm)								
100.01 (80.54)	2400	6.954 (26.322)	0.450 (0.274)	15.53 (3.060)	165 (83.8)	56 (13.3)	75 (23.8)	29.06 (96.78)
Standard Power Take-off Speed (1000 rpm)—One Hour								
103.67 (77.31)	2091	6.219 (23.538)	0.420 (0.255)	16.67 (3.284)	180 (82.4)	57 (14.0)	75 (23.8)	29.02 (96.65)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
90.20 (70.99)	2400	6.550 (24.822)	0.482 (0.293)	14.52 (2.860)	182 (83.3)	59 (14.7)	77 (24.7)	....
0.00 (0.00)	2617	2.650 (10.063)	....	....	177 (80.6)	57 (13.9)	74 (23.3)	....
49.05 (36.56)	2585	4.645 (17.582)	0.883 (0.489)	10.56 (2.080)	180 (81.9)	58 (14.4)	77 (24.7)	....
100.92 (81.23)	2400	6.999 (26.494)	0.449 (0.273)	15.56 (3.066)	183 (83.9)	58 (14.4)	76 (24.4)	....
24.77 (18.47)	2500	3.654 (13.832)	1.092 (0.628)	6.78 (1.373)	178 (81.1)	57 (13.9)	73 (23.9)	....
72.60 (54.21)	2534	5.588 (21.153)	0.558 (0.327)	13.01 (2.563)	180 (82.2)	57 (13.9)	75 (23.9)	....
Av 88.46 Av (65.98)	2532	5.917 (28.991)	0.881 (0.363)	11.65 (2.294)	180 (82.2)	58 (14.2)	76 (24.2)	29.03 (96.67)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (SH) Gear											
80.68 (66.13)	6005 (26.71)	5.54 (8.91)	2400	8.11	7.012 (26.544)	0.553 (0.336)	12.65 (2.491)	187 (85.0)	48 (8.6)	53 (11.4)	28.56 (96.65)
75% of Pull at Maximum Power—Two Hours 10th (SH) Gear											
72.31 (53.92)	4302 (20.25)	5.96 (9.59)	2517	5.85	6.273 (23.746)	0.647 (0.369)	11.53 (2.271)	186 (85.3)	43 (6.3)	50 (10.1)	29.04 (98.87)
50% of Pull at Maximum Power—Two Hours 10th (SH) Gear											
49.96 (37.26)	3035 (13.50)	6.17 (9.94)	2585	4.17	5.508 (20.321)	0.752 (0.457)	9.51 (1.874)	185 (85.0)	39 (3.8)	44 (6.4)	29.08 (98.20)
50% of Pull at Reduced Engine Speed—Two Hours 13th (TL) Gear											
49.95 (37.25)	3056 (13.50)	6.17 (9.93)	1500	4.10	3.617 (13.691)	0.507 (0.308)	13.80 (2.719)	184 (84.4)	42 (5.5)	48 (8.9)	29.10 (98.25)
MAXIMUM POWER IN SELECTED GEARS											
84.45 (62.97)	9522 (41.47)	3.40 (5.47)	2461	14.94	7th (4L) Gear			186 (85.3)	35 (1.7)	40 (4.4)	29.05 (98.10)
88.19 (65.77)	8571 (37.24)	3.98 (6.34)	2390	12.68	8th (5L) Gear			187 (85.8)	41 (5.0)	47 (8.3)	28.50 (96.24)
88.15 (65.74)	7043 (31.33)	4.80 (7.55)	2400	9.62	9th (6H) Gear			186 (85.6)	41 (5.0)	47 (8.3)	28.49 (96.21)
80.92 (67.06)	6080 (26.99)	5.56 (8.94)	2398	7.95	10th (5H) Gear			186 (85.6)	40 (4.4)	46 (7.8)	28.48 (96.17)
91.22 (68.02)	5308 (25.61)	6.45 (10.37)	2399	6.92	11th (6L) Gear			187 (85.8)	42 (5.6)	50 (10.0)	28.55 (96.34)
87.70 (65.40)	3740 (16.64)	8.79 (14.13)	2401	4.87	12th (6H) Gear			187 (85.8)	42 (5.6)	51 (10.6)	28.54 (96.30)

Department of Agricultural Engineering

Dates of Test: April 17 to May 1, 1984

Manufacturer: MASSEY FERGUSON S.A. RN 188 LA Boursidiere-92357, Le Plessis, Robinson, France

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8401 **Fuel weight** 6.995 lbs/gal *(0.838 kg/l)* **Oil SAE** 20-20W **API service classification** SE, CC, CD **To motor** 4.022 gal *(15.223 l)* **Drained from motor** 3.452 gal *(13.069 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 47.5 hours.

ENGINE: **Make** Perkins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** TU31107U706132A **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875" × 5" *(98.4 mm × 127 mm)* **Compression ratio** 15.5 to 1 **Displacement** 354 cu in *(5798 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two paper cartridges **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** front wheel assist **Serial No.** A3525UWK320219A **Tread width** rear 63.8" *(1620 mm)* to 96.9" *(2460 mm)* front 63.0" *(1600 mm)* to 81.5" *(2070 mm)* **Wheel base** 107.3" *(2726 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 38.5" *(978 mm)* Vertical distance above roadway 40.7" *(1033 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.3 *(2.1)* second 1.8 *(2.8)* third 2.0 *(3.3)* fourth 2.7 *(4.4)* fifth 2.8 *(4.6)* sixth 3.8 *(6.1)* seventh 3.9 *(6.3)* eighth 4.6 *(7.4)* ninth 5.3 *(8.5)* tenth 6.1 *(9.8)* eleventh 7.0 *(11.3)* twelfth 9.4 *(15.1)* thirteenth 9.8 *(15.8)* fourteenth 13.1 *(21.1)* fifteenth 13.7 *(22.0)* sixteenth 18.2 *(29.3)* reverse 1.5 *(2.3)*, 1.9 *(3.1)*, 2.2 *(3.6)*, 3.0 *(4.8)*, 3.1 *(5.0)*, 4.1 *(6.7)*, 4.3 *(6.9)*, 5.0 *(8.1)*, 5.8 *(9.3)*, 6.7 *(10.8)*, 7.7 *(12.4)*, 10.2 *(16.3)* **Clutch** single dry disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 194.5" *(4.94 m)* left 187" *(4.75 m)* (on concrete surface without brake) right 228" *(5.79 m)* left 222" *(5.64 m)* **Turning space diameter** (on concrete surface with brake applied) right 408" *(10.28 m)* left 391" *(9.93 m)* (on concrete surface without brake) right 471" *(11.96 m)* left 459" *(11.66 m)* **Power take-off** 540 rpm at 1992 engine rpm and 1000 rpm at 2091 engine rpm.

LUGGING ABILITY IN 10th (SH) GEAR

Crankshaft Speed rpm	2398	2158	1919	1893	1438	1195
Pull—lbs (kN)	6069 (26.99)	6605 (29.68)	7195 (32.23)	7891 (34.47)	7650 (34.29)	7587 (33.11)
Increase in Pull %	0	9	19	27	26	22
Power—Hp (kW)	80.92 (67.06)	87.21 (65.03)	83.57 (62.32)	77.88 (58.07)	65.41 (48.78)	53.06 (39.56)
Speed—Mph (km/h)	3.58 (8.94)	4.93 (7.97)	4.56 (7.01)	3.80 (6.11)	3.21 (5.16)	2.69 (4.34)
Slip %	7.98	8.57	9.69	10.78	10.64	10.10

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	80.5	81.5
75% of Pull at Maximum Power—Two Hours		80.5
50% of Pull at Maximum Power—Two Hours		80.0
50% of Pull at Reduced Engine Speed—Two Hours		76.5
Bystander in 15th (SL) gear		89.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (SH) Gear											
90.10 (67.19)	5004 (26.22)	5.73 (9.23)	2401	5.73	6.901 (26.447)	0.543 (0.330)	12.89 (2.739)	187 (86.1)	45 (4.9)	57 (13.9)	28.00 (96.50)
MAXIMUM POWER IN SELECTED GEARS											
80.16 (59.77)	12023 (53.48)	2.50 (4.02)	2400	14.79	5th (3L) Gear			185 (85.0)	35 (1.7)	40 (4.4)	29.01 (97.96)
91.74 (68.41)	8240 (36.65)	4.10 (6.72)	2400	9.41	8th (5L) Gear			187 (85.8)	41 (5.0)	48 (8.9)	28.51 (96.27)
91.54 (68.11)	5050 (26.30)	5.55 (9.23)	2401	5.54	10th (5H) Gear			186 (85.3)	40 (4.4)	46 (7.8)	28.47 (96.14)
92.27 (68.81)	5215 (23.19)	6.04 (10.68)	2401	4.93	11th (6L) Gear			188 (85.6)	42 (5.6)	49 (9.4)	28.52 (96.31)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires Ballast	—No., size, ply & psi (kPa)	Two 18.4-30; 8; 20 (140)	Two 18.4-30; 8; 20 (140)
	—Liquid (each)	535 lb (243 kg)	None
	—Cast Iron (each)	None	None
Front Tires Ballast	—No., size, ply & psi (kPa)	Two 13.6-28; 8; 22 (150)	Two 13.6-28; 8; 22 (150)
	—Liquid (each)	230 lb (108 kg)	None
	—Cast Iron (each)	None	None
Height of Drawbar		24 in (610 mm)	24 in (610 mm)
Basic Weight with Operator	—Rear	9399 lb (4318 kg)	6430 lb (3033 kg)
	—Front	5125 lb (2323 kg)	4615 lb (2109 kg)
	—Total	14845 lb (6643 kg)	11100 lb (5042 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 143°F *(61.5°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection, a longitudinal scratch was found in cylinder No. 4.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1512**, June 18, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Massey Ferguson 3525 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1513
MASSEY FERGUSON 3545 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Clutch shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temperature °F (°C) Cooling medium	Air ent. bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1147 rpm)								
136.72 (94.50)	2680	7.307 (30.268)	0.441 (0.268)	15.80 (3.132)	186 (85.5)	57 (13.9)	75 (24.1)	28.91 (97.61)
Standard Power Take-off Speed (1000 rpm)—One Hour								
125.13 (93.30)	2592	7.181 (27.179)	0.411 (0.250)	17.51 (3.551)	183 (85.1)	57 (13.8)	75 (23.9)	28.90 (97.59)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
111.71 (83.30)	2687	7.430 (28.081)	0.466 (0.280)	15.96 (2.966)	185 (84.7)	57 (13.9)	76 (24.2)	— —
0.00 (0.00)	2614	2.032 (20.796)	— —	— —	179 (81.7)	57 (13.6)	75 (23.6)	— —
97.55 (72.75)	2560	5.211 (19.725)	0.655 (0.385)	11.04 (2.176)	182 (83.3)	57 (13.9)	76 (24.2)	— —
127.13 (94.80)	2650	8.097 (30.110)	0.441 (0.268)	15.88 (3.128)	187 (86.1)	57 (13.9)	76 (24.4)	— —
29.05 (21.66)	2585	3.061 (15.574)	0.978 (0.595)	7.15 (1.408)	180 (82.9)	56 (13.3)	75 (23.6)	— —
95.10 (67.52)	2529	6.592 (24.845)	0.522 (0.317)	13.41 (2.642)	188 (85.9)	57 (13.6)	75 (23.6)	— —
Air 88.44 **Air** (65.94)	2630	5.680 (21.500)	0.577 (0.351)	12.11 (2.386)	189 (87.4)	57 (13.2)	75 (23.9)	28.80 (97.51)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp. °F (°C) Cool. eng. med.	Air ent. bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 18th (SH) Gear											
109.57 (70.23)	6855 (29.02)	5.87 (9.45)	2601	7.98	7.963 (30.149)	0.544 (0.331)	12.86 (2.532)	186 (85.2)	65 (17.2)	54 (12.2)	28.84 (97.59)
75% of Pull at Maximum Power—Ten Hours 18th (SH) Gear											
82.99 (61.88)	6861 (30.52)	6.39 (10.32)	2529	8.17	7.234 (27.383)	0.610 (0.371)	11.47 (2.260)	187 (86.3)	65 (17.9)	63 (16.2)	28.75 (97.29)
50% of Pull at Maximum Power—Two Hours 18th (SH) Gear											
57.27 (42.70)	5060 (14.68)	6.51 (10.47)	2568	4.20	5.940 (22.482)	0.726 (0.441)	9.04 (1.890)	187 (86.1)	68 (17.2)	58 (13.3)	28.68 (96.87)
50% of Pull at Reduced Engine Speed—Two Hours 13th (TL) Gear											
57.38 (42.79)	5301 (14.68)	6.53 (10.49)	2369	4.12	6.167 (23.777)	0.708 (0.369)	13.77 (2.710)	186 (85.6)	69 (19.4)	62 (16.6)	28.66 (96.76)
MAXIMUM POWER IN SELECTED GEARS											
108.56 (71.01)	10963 (48.80)	3.97 (5.73)	2443	14.98	7th (6L) Gear			188 (86.7)	65 (6.1)	51 (10.6)	28.68 (96.88)
102.54 (76.47)	9801 (43.60)	4.25 (6.81)	2401	11.68	8th (5L) Gear			188 (86.7)	64 (6.7)	50 (10.0)	28.68 (97.32)
100.32 (74.81)	7561 (33.62)	4.98 (8.01)	2480	9.43	9th (4H) Gear			189 (86.9)	65 (7.2)	51 (10.6)	28.68 (97.32)
105.26 (77.68)	6801 (29.76)	5.87 (9.44)	2598	8.02	10th (3H) Gear			188 (86.7)	65 (7.2)	53 (11.7)	28.67 (97.49)
105.16 (78.42)	5786 (25.74)	6.82 (10.97)	2600	6.97	11th (4L) Gear			189 (86.9)	65 (7.2)	54 (12.2)	28.67 (97.49)
100.14 (74.67)	4942 (17.98)	9.59 (14.99)	2599	4.73	12th (3H) Gear			188 (86.7)	65 (7.2)	55 (11.7)	28.66 (97.46)

Department of Agricultural Engineering

Dates of Test: April 14-25, 1984

Manufacturer: MASSEY FERGUSON S.A. RN 186 LA Beauvallaise-BESSY, Le Plessis, Robinson, France

FUEL, OIL AND TIRE: **Fuel** No. 2 Diesel **Cetane No.** 46.0 (using calculation from oil company's inspection data) **Specific gravity** converted to 60°/60° (15°/15°) 0.9401 **Fuel weight** 6.986 lbs/gal (0.838 kg/l) **Oil** SAE 25-20W **API service classification** SE, CC, CD **To motor** 4.902 gal (18.556 l) **Drained from motor** 5.000 gal (11.432 l) **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 55.0 hours.

ENGINE: **Make** Perkins Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** TU51093U706641K **Crankshaft lengthwise** **Rated rpm** 2600 **Bore and stroke** 5.875" × 5.0" (98.4 mm × 127 mm) **Compression ratio** 15.5 to 1 **Displacement** 594 cu in (5798 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** front wheel assist **Serial No.** A354VRWE509956A **Tread width** rear 65.8" (1620 mm) to 96.9" (2460 mm) front 65.9" (1600 mm) to 81.3" (2070 mm) **Wheel base** 107.5" (2726 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center line of rear wheels 38.7" (983 mm) Vertical distance above roadway 39.8" (1010 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.4 (2.2) second 1.8 (2.9) third 2.1 (3.4) fourth 2.8 (4.5) fifth 3.6 (5.8) sixth 3.9 (6.3) seventh 4.1 (6.6) eighth 4.8 (7.7) ninth 5.5 (8.8) tenth 6.3 (10.2) eleventh 7.5 (11.7) twelfth 9.7 (15.6) thirteenth 10.3 (16.5) fourteenth 13.6 (21.9) fifteenth 14.2 (22.8) sixteenth (8.9 (30.5) reverse 1.5 (2.4), 2.0 (3.2), 2.5 (3.7), 3.1 (4.9), 5.2 (7.2), 4.5 (6.9), 4.5 (7.2), 5.2 (8.4), 6.0 (9.6), 6.9 (11.2), 8.0 (12.8), 10.6 (17.1) **Clutch** single dry disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 194.5" (4.94 m) left 187" (4.75 m)

LUGGING ABILITY IN 10th (SH) GEAR

Crankshaft Speed rpm:	2595	2304	1915	1680	1439	1196
Pull—lbs (kN)	6800 (29.36)	7215 (32.11)	8005 (35.97)	8211 (36.80)	8067 (36.16)	7450 (33.39)
Increase in Pull %	0	9	22	24	22	13
Power—Hp (kW)	105.95 (77.60)	108.04 (75.17)	97.97 (73.05)	87.83 (65.34)	73.92 (55.12)	57.27 (42.71)
Speed—Mph (km/h)	5.87 (9.44)	5.26 (8.45)	4.58 (7.37)	4.00 (6.44)	3.44 (5.53)	2.88 (4.64)
Slip %	0.02	0.02	9.94	10.52	10.25	9.96

TRACTOR SOUND LEVEL WITH CAB	From Wheel Drive Engaged dB(A)	From Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	92.0	82.5
75% of Pull at Maximum Power—Ten Hours		81.0
50% of Pull at Maximum Power—Two Hours		82.5
50% of Pull at Reduced Engine Speed—Two Hours		78.0
Bystander in 10th (SL) gear		88.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW h)	Hp.hr/gal (kW h/l)	Temp. °F (°C) Air ent. bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 18th (SH) Gear										
104.50 (59.22)	6005 (26.69)	6.05 (9.73)	2599	5.60	7.956 (30.119)	0.591 (0.325)	15.19 (2.957)	189 (86.9)	65 (7.8)	52 (11.1)	28.85 (97.42)
MAXIMUM POWER IN SELECTED GEARS										
97.19 (72.48)	13982 (62.20)	2.61 (4.20)	2605	14.94	5th (5L) Gear			187 (85.6)	59 (15.9)	45 (7.2)	28.67 (96.81)
106.64 (79.52)	9836 (43.76)	4.43 (7.12)	2600	7.91	8th (5L) Gear			188 (86.7)	64 (6.7)	49 (9.4)	28.88 (97.52)
105.75 (78.86)	6551 (29.14)	6.05 (9.74)	2599	5.57	10th (SH) Gear			188 (86.7)	65 (7.2)	52 (11.1)	28.88 (97.52)
106.91 (79.75)	5724 (25.46)	7.09 (11.25)	2599	4.04	11th (6L) Gear			189 (86.9)	65 (7.2)	53 (11.7)	28.86 (97.46)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, phs & psi (kPa)	Two 20.8-38; 8; 18 (125)	Two 20.8-38; 8; 18 (125)
Ballast	—Liquid (each)	1025 lb (465 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, phs & psi (kPa)	Two 16.9-28; 6; 20 (140)	Two 16.9-28; 6; 20 (140)
Ballast	—Liquid (each)	540 lb (245 kg)	None
	—Cast Iron (each)	None	None
Height of Drawbar		22 in (560 mm)	22 in (560 mm)
Static Weight with Operator	—Rear	11500 lb (5167 kg)	6500 lb (1878 kg)
	—Front	3045 lb (2651 kg)	4750 lb (2155 kg)
	—Total	17255 lb (7818 kg)	13000 lb (6033 kg)

(on concrete surface without brake) right 228" (5.79 m) left 222" (5.64 m) **Turning space diameter** (on concrete surface with brake applied) right 405" (10.28 m) left 391" (9.93 m) (on concrete surface without brake) right 471" (11.96 m) left 459" (11.66 m) **Power take-off** 540 rpm at 1992 engine rpm and 1000 rpm at 2092 engine rpm.

REPAIRS and ADJUSTMENTS: During drawbar limber up run, the engine oil began leaking from the outlet fitting of the oil cooler. The fitting was tightened and limber up resumed.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 142°F (61.3°C). Six gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1513**, June 18, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Massey Ferguson 3545 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1518 — VERSATILE 256 DIESEL HYDROSTATIC

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—532 rpm)								
84.36 (62.91)	2500	5.211 (19.723)	0.432 (0.263)	16.19 (3.190)	185 (84.7)	64 (17.7)	75 (23.8)	28.81 (97.29)
Standard Power Take-off Speed (540 rpm) — One hour)								
85.08 (63.44)	2447	5.171 (19.574)	0.425 (0.259)	16.45 (3.241)	188 (86.6)	65 (18.1)	76 (24.3)	28.81 (97.29)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
74.39 (55.62)	2603	4.874 (18.451)	0.437 (0.278)	15.30 (3.015)	183 (83.6)	65 (17.2)	73 (22.8)	....
0.00 (0.00)	2714	1.788 (6.767)	....	....	178 (81.1)	64 (17.9)	74 (23.3)	....
37.82 (28.20)	2637	3.302 (12.122)	0.595 (0.360)	11.81 (2.326)	187 (86.1)	65 (18.1)	75 (23.6)	....
85.14 (63.49)	2501	5.226 (19.781)	0.430 (0.261)	16.29 (3.210)	188 (86.6)	65 (18.1)	75 (23.9)	....
19.08 (14.23)	2660	2.465 (9.331)	0.904 (0.550)	7.74 (1.525)	187 (86.1)	65 (18.3)	76 (24.4)	....
56.00 (41.76)	2605	3.957 (14.978)	0.494 (0.301)	14.15 (2.788)	182 (83.3)	65 (18.1)	75 (23.6)	....
Av 48.44 Av (33.88)	2820	3.585 (13.572)	0.552 (0.336)	12.67 (2.497)	184 (84.4)	64 (17.9)	75 (23.6)	29.82 (97.33)

The following performance figures apply to tractor chassis S/N 256 85 209050 and above.

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5.5 MPH 2nd Range											
60.02 (45.20)	4122 (18.34)	5.51 (8.87)	2500	3.55	5.150 (19.419)	0.592 (0.360)	11.82 (2.328)	195 (89.2)	69 (20.6)	79 (26.1)	29.03 (98.01)
75% of Pull at Maximum Power—Ten Hours 5.5 MPH 2nd Range											
51.09 (38.54)	3219 (14.32)	6.02 (9.69)	2599	2.53	4.668 (17.672)	0.632 (0.384)	11.07 (2.181)	195 (90.7)	68 (19.8)	75 (23.8)	28.95 (97.76)
50% of Pull at Maximum Power—Two Hours 5.5 MPH 2nd Range											
36.05 (26.88)	2146 (9.55)	6.30 (10.14)	2612	1.56	3.787 (14.335)	0.735 (0.447)	9.52 (1.875)	189 (87.2)	74 (23.1)	84 (28.9)	29.01 (97.95)
50% of Pull at Reduced Engine Speed—Two Hours Speed Setting—0.5 MPH 3rd Range at 2500 Engine RPM											
36.03 (26.87)	2147 (9.55)	6.29 (10.13)	1600	1.63	2.979 (11.278)	0.579 (0.352)	12.09 (2.382)	184 (84.2)	69 (20.3)	71 (21.7)	29.01 (97.95)
MAXIMUM POWER AT SELECTED SPEEDS											
54.49 (40.64)	9134 (40.63)	2.24 (3.60)	2501	14.78	The infinitely		1st Range	183 (83.9)	59 (15.0)	66 (18.9)	29.02 (98.00)
60.77 (45.31)	7499 (33.36)	3.04 (4.89)	2498	8.15	variable drive		1st Range	195 (89.4)	59 (15.0)	66 (18.9)	29.02 (98.00)
61.50 (45.86)	6647 (29.57)	3.47 (5.58)	2501	6.74	control was		1st Range	186 (85.6)	60 (15.6)	67 (19.4)	29.03 (98.03)
60.38 (45.03)	5649 (25.13)	4.01 (6.45)	2502	5.36	set to give		1st Range	183 (83.9)	60 (15.6)	67 (19.4)	29.03 (98.03)
51.61 (45.94)	5082 (22.61)	4.55 (7.32)	2499	4.68	the travel		2nd Range	191 (88.1)	63 (17.2)	69 (20.6)	29.04 (98.06)
62.60 (46.68)	4697 (20.89)	5.00 (8.04)	2499	4.25	speeds shown.		2nd Range	194 (89.7)	63 (17.2)	69 (20.6)	29.04 (98.06)
62.81 (46.84)	4292 (19.09)	5.49 (8.83)	2500	3.69			2nd Range	193 (89.2)	65 (18.3)	72 (22.2)	29.05 (98.10)
61.76 (46.05)	3861 (17.17)	6.00 (9.65)	2499	3.24			2nd Range	191 (88.3)	65 (18.3)	73 (22.8)	29.05 (98.10)
60.60 (45.19)	3504 (15.58)	6.49 (10.44)	2498	2.99			2nd Range	189 (87.2)	65 (18.9)	74 (23.3)	29.05 (98.10)
60.06 (44.79)	3221 (14.33)	6.90 (11.25)	2500	2.80			2nd Range	186 (85.6)	66 (18.9)	75 (23.9)	29.04 (98.06)

Department of Agricultural Engineering

Dates of Test: May 10-21, 1984

Manufacturer: VERSATILE FARM EQUIPMENT, 1260 Clarence Avenue, Winnipeg, Manitoba Canada R3T 1T5

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8405 **Fuel weight** 6.998 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, CC, CD **To motor** 2.809 gal *(10.633 l)* **Drained from motor** 2.315 gal *(8.763 l)* **Transmission and final drive lubricant** Versatile Hy-Gear 25 **Hydrostatics fluid** Dexron II **Final drive lubricant** SAE 85W90 **Total time engine was operated** 48.5 hours.

ENGINE: Make Consolidated Diesel Corporation Diesel **Type** four cylinder vertical with turbocharger **Serial No.** 44105169 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 4.02" × 4.72" *(102 mm × 120 mm)* **Compression ratio** 17.5 to 1 **Displacement** 239 cu in *(3921 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydrostatics oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive **Serial No.** 256 84 205769 **Tread width** rear 63.4" *(1610 mm)* to 95.2" *(2418 mm)* front 63.4" *(1610 mm)* to 95.2" *(2418 mm)* **Wheel base** 86" *(2184 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 46.5" *(1181 mm)* Vertical distance above roadway 37" *(940 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** infinitely variable hydrostatic using a variable displacement pump and fixed displacement motor, plus a 3 speed manual transmission. **Advertised speeds mph (km/h) Late chassis S/N** forward 0-5.2 *(8.4)*, 0-8.5 *(13.7)*, 0-19.9 *(32.0)* reverse 0-5.2 *(8.4)*, 0-8.5 *(13.7)*, 0-19.9 *(32.0)* **Early chassis S/N** forward 0-5.2 *(8.4)*, 0-9.7 *(15.6)*, 0-19.9 *(32.0)*, reverse 0-5.2 *(8.4)*, 0-9.7 *(15.6)*, 0-19.9 *(32.0)* **Clutch** none **Brakes** caliper disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 173.8" *(4.41 m)* left 173.8" *(4.41 m)* **Turning space diameter** (on concrete surface without brake) right 362.8" *(9.21 m)* left 362.8" *(9.21 m)* **Power take-off** 540 rpm at 2447 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITH CAB	early S/N dB(A)	late S/N dB(A)
Maximum Available Power—Two Hours	81.5	78.5
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		76.0
Bystander in 3rd Range		88.0

SUPPLEMENTARY TESTS

The following performance figures apply to tractor chassis S/N 256 84 205789 and below.

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5.5 MPH 2nd Range											
61.13 (45.59)	4157 (18.49)	5.52 (8.88)	2500	3.43	5.194 (19.665)	0.595 (0.362)	11.77 (2.318)	192 (88.9)	66 (18.6)	71 (21.7)	28.81 (97.27)
MAXIMUM POWER AT SELECTED SPEEDS											
55.05 (39.56)	9143 (40.67)	2.18 (3.50)	2318	14.97	The infinitely		1st Range	192 (88.6)	64 (17.8)	67 (19.4)	28.86 (97.46)
58.91 (43.93)	7368 (32.77)	3.00 (4.83)	2501	7.73	variable drive		1st Range	183 (83.9)	64 (17.8)	67 (19.4)	28.86 (97.46)
59.72 (44.54)	6438 (28.64)	3.48 (5.60)	2490	6.14	control was		1st Range	197 (91.7)	64 (17.8)	67 (19.4)	28.86 (97.46)
60.07 (44.79)	5631 (25.05)	4.00 (6.44)	2500	5.17	set to give		1st Range	186 (85.6)	65 (18.3)	68 (20.0)	28.85 (97.42)
59.95 (44.71)	4953 (22.03)	4.54 (7.31)	2501	4.31	the travel		2nd Range	199 (92.5)	65 (18.3)	68 (20.0)	28.85 (97.42)
60.73 (45.29)	4565 (20.30)	4.99 (8.03)	2499	3.87	speeds shown.		2nd Range	195 (90.3)	65 (18.3)	68 (20.0)	28.85 (97.42)
61.58 (45.92)	4185 (18.62)	5.52 (8.88)	2502	3.43			2nd Range	200 (93.1)	66 (18.9)	71 (21.7)	28.80 (97.25)
62.29 (46.45)	3878 (17.25)	6.02 (9.70)	2500	3.18			2nd Range	185 (84.7)	66 (18.9)	69 (20.6)	28.84 (97.39)
62.32 (46.47)	3592 (15.98)	6.51 (10.47)	2499	2.92			2nd Range	189 (87.2)	66 (18.9)	69 (20.6)	28.84 (97.39)
62.35 (46.64)	3337 (14.84)	7.03 (11.31)	2501	2.60			2nd Range	191 (88.1)	66 (18.9)	70 (21.1)	28.83 (97.35)
61.92 (46.17)	3105 (13.81)	7.48 (12.03)	2502	2.34			2nd Range	189 (86.9)	66 (18.9)	70 (21.1)	28.83 (97.35)
58.92 (43.93)	2928 (10.36)	9.49 (15.27)	2502	1.76			3rd Range	194 (89.7)	66 (18.9)	71 (21.7)	28.83 (97.35)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28, 6; 18 (125)
Ballast	—Liquid (each)	None	None
	—Cast Equip. (each)	105 lb (48 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 18 (125)
Ballast	—Liquid (each)	550 lb (249 kg)	None
	—Cast Iron (each)	None	None
Height of Drawbar		18 in (460 mm)	18 in (460 mm)
Static Weight with Operator	—Rear	4410 lb (2000 kg)	4200 lb (1905 kg)
	—Front	8030 lb (2744 kg)	4950 lb (2245 kg)
	—Total	10460 lb (4744 kg)	9150 lb (4150 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 131°F *(55.0°C)*. Twelve travel speeds were chosen between 15% slip and 10 mph *(16.1 km/h)*. The tractor was tested with the new transmission (SN 256 85 209050 and above). The supplementary tests were performed with the older transmission (SN 256 84 205789 and below).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1518,** July 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Versatile 256 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

60.36 (45.01)	3018 (13.43)	7.50 (12.07)	2499	2.34		2nd Range	192 (88.9)	67 (19.4)	76 (24.4)	29.04 (98.06)
58.00 (43.32)	2296 (10.21)	9.49 (15.27)	2499	1.82		3rd Range	192 (88.9)	67 (19.4)	76 (24.4)	29.04 (98.06)

LUGGING ABILITY FROM SPEED SETTING 5.5 MPH 2ND RANGE

Crankshaft Speed rpm	2500	2251	1999	1745	1501	1256
Pull—lbs (kN)	4292 (19.09)	4770 (21.36)	5215 (23.37)	5571 (24.97)	5525 (24.76)	5518 (24.73)
Increase in Pull %	0	11	21	30	29	29
Power—Hp (kW)	62.81 (46.84)	61.08 (45.53)	57.70 (43.02)	52.02 (38.79)	44.81 (33.42)	37.40 (27.89)
Speed—Mph (km/h)	5.49 (8.83)	4.80 (7.73)	4.15 (6.68)	3.50 (5.64)	3.04 (4.90)	2.54 (4.09)
Slip %	3.89	4.12	4.74	5.24	5.24	5.11

Ten-Year Summary of Test Reports, 1974-1984

MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	ENGINE No. of Cylinders	Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	—FUEL CONSUMPTION (HP Hours Per Gallon) @:— Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	—Varying Drawbar Power— Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Allis-Chalmers																			
175	1156	Gas	8400	2010	4	4.000x4.500	226	1800	60.88	540	56.02	53.17	5.50	6875	11.78	9.44	10.22	9.64	8.20
5020	1270	Die.	3358	1298	2	3.62x3.74	77	2500	21.79	540	20.78	18.05	5.74	2346	13.99	10.99	11.07	10.51	8.62
5030	1271	Die.	3876	1346	2	3.82x3.94	90.1	2500	26.42	540	25.61	23.92	4.26	3389	13.82	11.28	11.64	11.48	9.68
5040	1230	Die.	6240	2180	3	3.740x4.330	143	2400	40.05	540	36.69	35.86	5.00	4837	15.47	11.80	12.58	12.74	10.44
5050	1240	Die.	7690	3280	3	4.055x4.330	168	2700	51.46	540	47.16	45.22	5.68	6075	16.10	12.42	12.58	13.01	11.24
6060 8 Speed	1397	Die.	8945	2480	4	3.876x4.25	200	2300	63.83	540	64.90	52.24	4.83	6846	16.26	12.07	13.27	11.99	10.10
6060 12 Speed	1398	Die.	11790	4200	4	3.876x4.25	200	2300	83.66	1000	74.49	72.32	5.74	9003	15.70	13.14	14.27	12.81	10.93
6140	1445	Die.	6195	1735	3	3.858x4.055	142	2500	41.08	541	38.04	33.97	5.20	4768	13.47	10.20	10.87	10.25	8.88
7000 Powershift	1195	Die.	12580	3030	6	3.875x4.25	301	2200	106.44	1000	105.85	92.64	6.08	9907	15.70	12.21	13.21	12.27	10.16
7010PD 20 Speed	1345	Die.	12790	1530	6	3.875x4.25	301	2300	106.53	1000	107.52	91.44	6.05	9426	15.48	11.57	12.59	11.48	9.68
7010PS 12 Speed	1346	Die.	12740	1365	6	3.875x4.25	301	2300	106.72	1000	106.33	91.61	6.11	9516	15.43	11.74	12.43	11.35	9.58
7020 Powershift	1259	Die.	15610	3840	6	3.875x4.25	301	2300	123.79	1000	123.50	105.36	6.59	12001	16.01	12.45	13.10	12.25	10.34
7020 Power Director	1260	Die.	15655	4085	6	3.875x4.25	301	2300	123.85	1000	125.51	107.36	6.63	11964	16.08	12.12	13.09	12.08	10.13
7040	1166	Die.	17380	5585	6	4.25x5.00	426	2300	136.49	1000	136.26	117.12	4.77	13619	15.35	11.78	12.94	11.86	9.90
7040 Powershift	1196	Die.	17355	4977	6	4.25x5.00	426	2300	136.30	1000	136.15	117.75	4.61	13547	15.51	11.95	13.05	12.29	10.39
7045 Power Director	1261	Die.	18980	4745	6	4.25x5.00	426	2300	146.18	1000	146.46	127.84	7.04	15430	14.62	11.26	12.16	11.40	9.72
7045 Powershift	1308	Die.	18990	4390	6	4.25x5.00	426	2300	146.88	1000	146.67	127.61	6.92	15449	14.92	11.32	12.58	11.71	9.62
7060	1167	Die.	20490	6500	6	4.25x5.00	426	2300	161.51	1000	160.44	140.59	6.94	17370	15.99	12.71	13.63	12.75	10.55
7060 Powershift	1197	Die.	20560	5915	6	4.25x5.00	426	2300	161.42	1000	161.65	144.13	4.92	17851	16.08	12.76	13.80	12.96	10.79
7080	1168	Die.	21720	7115	6	4.25x5.00	426	2550	181.51	996	181.51	153.78	4.58	18478	15.71	12.24	13.23	12.11	10.02
7580	1229	Die.	25000	1490	6	4.25x5.00	426	2550	186.35	996	186.35	160.79	6.91	23310	14.81	11.47	12.22	11.39	9.40
8010 Powershift	1446	Die.	13185	555	6	3.875x4.25	301	2300	107.38	1000	109.55	93.01	6.16	9102	15.01	11.49	12.57	11.48	9.54
8030 Powershift	1447	Die.	17100	2085	6	4.25x5.00	426	2300	133.75	1000	134.42	116.65	6.35	13348	15.25	11.78	12.93	11.87	10.00
8050 Powershift	1448	Die.	19380	4075	6	4.25x5.00	426	2300	152.40	1000	155.15	134.13	4.89	16728	15.88	12.51	13.71	12.73	10.80
8070 Powershift	1449	Die.	22370	5520	6	4.25x5.00	426	2400	170.72	1000	171.44	147.29	5.87	18777	16.48	12.81	13.67	12.59	10.64
8550	1262	Die.	29360	2320	6	5.250x5.625	731	2500	253.88	998	253.88	224.18	5.83	26220	14.57	10.94	12.47	11.45	9.35
Belarus																			
250	1183	Die.	5490	939	2	4.134x4.724	127	1800	24.95	540	25.02	21.81	4.54	2280	15.56	13.23	13.19	13.20	11.80
T25A	1200	Die.	5490	939	2	4.134x4.724	127	1800	28.70	540	28.15	24.46	4.51	2570	13.95	13.46	12.21	13.48	11.94
1500 12 Speed	1333	Die.	19685	1120	6	5.118x4.528	558	2100	168.76	1000	169.63	151.96	5.31	19311	16.48	13.69	14.53	13.96	12.25
7100 16 Speed	1334	Die.	32460	None	12	5.118x5.512	1360	1900	269.62	1003	269.62	259.46	4.78	30845	15.85	13.26	14.82	14.35	12.56
Big Bud																			
525/50 9 Speed	1400	Die.	51920	None	6	6.25x6.25	1150	2100	....	....	....	421.49	5.64	42216	....	....	14.87	13.97	12.01
Case																			
1190 Manual	1378	Die.	6780	2160	3	3.939x4.500	165	2200	43.09	540	38.54	36.60	7.60	4620	14.99	13.09	12.22	12.59	11.39
1270	1160	Die.	18910	3440	6	4.375x5.000	451	2100	135.39	1000	135.41	121.83	6.46	15648	14.23	11.14	12.16	11.49	9.88
1290 Manual	1379	Die.	9320	2750	4	3.939x4.000	195	2200	53.73	540	47.80	46.41	4.97	6851	15.20	13.34	12.41	12.90	11.68
1390 Manual	1380	Die.	9780	3160	4	3.939x4.500	219	2200	60.59	1000	58.40	52.16	4.92	7348	15.58	13.36	12.89	13.24	11.77
1410 Manual	1209	Die.	10910	3160	4	3.939x4.500	219	2300	80.88	540	79.35	69.25	5.32	7846	17.47	14.69	14.20	14.38	12.45
1410 Powershift	1210	Die.	10930	3150	4	3.939x4.500	219	2300	80.81	540	76.21	67.98	7.90	7815	16.86	13.76	13.34	13.21	11.45
1490 Manual	1381	Die.	11305	3600	4	3.939x4.500	219	2200	70.51	1000	68.75	60.45	5.63	8340	17.18	13.62	13.82	13.00	11.25
1490 Powershift	1382	Die.	11060	2635	4	3.939x4.500	219	2200	70.91	1000	70.48	61.56	6.76	8405	16.42	12.36	13.12	12.01	10.20
1570	1218	Die.	20350	4060	6	4.625x5.000	504	2100	180.41	1003	180.41	152.96	5.02	17115	15.09	12.47	12.72	12.46	10.88
1594 Synchro	1546	Die.	11100	1755	6	3.939x4.500	329	2300	85.90	1000	80.83	73.54	5.29	8331	17.04	14.04	14.26	13.56	11.99
1594 Powershift	1547	Die.	11210	1745	6	3.939x4.500	329	2300	85.54	1000	81.94	70.59	5.47	8198	16.86	13.52	13.59	13.10	11.45
1690 Manual	1383	Die.	12470	3715	6	3.939x4.500	329	2300	90.39	1000	87.76	78.08	4.27	10536	15.95	13.95	13.20	13.50	12.28
1896 Powershift	1548	Die.	13925	430	6	4.016x4.724	359	2100	95.92	997	95.92	86.45	4.77	12357	16.71	12.94	14.82	13.65	11.34
2090 Manual	1304	Die.	15030	3120	6	4.625x5.000	504	2100	108.74	998	108.74	95.31	7.10	11655	15.40	12.23	13.41	12.69	10.73
2090 Power Shift	1295	Die.	15190	3160	6	4.625x5.000	504	2100	108.29	998	108.29	93.95	6.56	11211	14.94	11.77	12.49	11.96	10.14

2094 Powershift	1525	Die.	14750	560	6	4.625x5.000	504	2100	110.50	998	110.50	100.12	6.34	11910	15.40	12.26	13.81	12.93	11.27
2096 Powershift	1549	Die.	14940	760	6	4.016x4.724	359	2100	115.67	998	115.67	101.40	6.37	12915	17.38	14.01	15.21	13.92	11.95
2290 Manual	1296	Die.	15400	2630	6	4.625x5.000	504	2100	128.80	998	128.80	109.36	5.32	12635	14.52	11.66	12.46	11.73	10.07
2290 Powershift	1297	Die.	15840	2140	6	4.625x5.000	504	2100	129.08	998	129.08	111.68	6.25	12749	14.52	11.53	12.65	11.37	9.77
2294 Powershift	1526	Die.	15670	1280	6	4.625x5.000	504	2100	131.97	998	131.97	116.38	6.31	13017	14.86	11.82	13.11	12.21	10.51
2390 Powershift	1302	Die.	18710	3120	6	4.625x5.000	504	2100	160.72	1002	160.72	146.01	6.59	16020	15.23	12.41	13.20	12.66	10.99
2394 Powershift	1527	Die.	18595	2355	6	4.625x5.000	504	2100	162.15	1002	162.15	142.07	5.53	15497	15.46	12.70	13.42	12.71	11.04
2590 Powershift	1303	Die.	20500	4760	6	4.625x5.000	504	2100	180.38	1003	180.38	159.01	6.57	17865	15.53	12.97	13.42	13.03	11.67
2594 Powershift	1529	Die.	19790	3570	6	4.625x5.000	504	2100	182.07	1002	182.07	161.96	6.40	16874	15.22	12.88	13.37	12.94	11.63
2670	1165	Die.	25260	4450	6	4.625x5.000	504	2200	219.44	1008	219.44	194.60	5.28	23618	15.29	12.59	13.42	12.60	10.88
2870	1241	Die.	28150	3050	6	5.000x5.710	673	2200	252.10	1009	252.10	219.61	5.72	26386	15.45	12.01	12.98	12.37	10.40
3294 Powershift	1528	Die.	17980	0	6	4.625x5.000	504	2100	162.63	998	162.63	143.68	5.75	16242	15.32	12.58	13.55	12.76	11.13
M-B 4/94	1211	Die.	13110	4620	6	3.819x5.039	346	2550	73.33	1000	70.17	66.33	5.33	10558	15.13	10.68	12.55	11.65	9.49
4490	1328	Die.	22450	1610	6	4.625x5.000	504	2200	175.20	1000	175.20	153.30	5.65	21400	15.27	12.36	13.30	12.52	10.87
4690	1329	Die.	25230	2920	6	4.625x5.000	504	2200	219.62	1000	219.62	195.60	5.97	24564	15.26	12.76	13.39	12.84	11.21
4890	1330	Die.	28460	2710	6	5.00x5.71	673	2200	253.41	1000	253.41	224.81	5.96	27627	16.32	13.02	14.19	13.27	11.36
4994 Powershift	1530	Die.	39930	8615	8	5.00x5.51	866	2100	344.04	991	344.04	306.43	7.20	34519	17.03	13.81	14.67	13.87	12.18
John Deere																			
750 8 Speed	1504	Die.	2150	155	3	3.15x3.35	78.2	2400	18.54	540	19.80	15.73	6.41	1661	15.06	11.61	12.48	11.53	9.83
850	1280	Die.	3528	992	3	3.15x3.35	78	2600	22.27	540	20.66	18.92	4.90	2699	14.26	11.51	11.23	11.22	10.21
950	1281	Die.	3615	803	3	3.54x3.54	105	2400	27.36	540	28.05	23.46	4.98	3056	14.68	12.36	12.42	12.23	10.63
1050	1327	Die.	4140	730	3	3.54x3.54	105	2400	33.41	540	33.42	28.15	5.27	3466	15.46	12.36	12.34	11.99	10.13
1250	1437	Die.	5180	90	3	3.74x4.33	143	2500	40.70	540	40.98	34.01	5.39	3750	17.00	13.56	13.90	12.71	10.68
1450 9 Speed	1505	Die.	6570	1340	4	3.74x4.33	190	2400	51.39	540	50.93	43.79	7.68	5321	17.60	14.01	14.74	13.67	11.64
1650 9 Speed	1506	Die.	7785	2435	4	3.74x4.33	190	2300	62.22	540	62.70	54.06	7.79	6572	18.81	15.53	15.96	14.97	12.95
2040	1191	Die.	6420	1620	3	4.020x4.330	164	2500	40.86	540	37.62	34.15	5.64	4634	15.50	11.18	11.87	11.15	9.11
2040 8 Speed	1350	Die.	6500	1465	3	4.19x4.33	179	2500	41.25	540	40.53	33.31	5.63	4873	15.62	11.73	12.02	11.35	9.03
2040 8 Speed TSS (1)	1393	Die.	6040	265	3	4.19x4.33	179	2500	40.44	540	40.22	33.21	5.16	5541	14.87	10.93	11.69	10.71	8.76
2150 16 Speed	1469	Die.	5930	820	3	4.19x4.33	179	2500	46.47	540	46.13	38.69	6.98	4875	14.77	11.15	11.88	11.24	9.47
2240	1192	Die	7340	2390	3	4.19x4.33	179	2500	50.37	540	46.78	41.28	5.54	5433	15.20	11.08	11.57	11.18	9.51
2240 8 Speed TSS (1)	1394	Die.	6205	310	3	4.19x4.33	179	2500	50.90	540	49.20	42.13	5.08	5777	15.32	11.75	11.98	11.45	9.78
2350 16 Speed	1470	Die.	7190	380	4	4.19x4.33	239	2500	56.18	540	55.69	47.53	6.77	5688	15.67	11.66	12.96	11.87	9.87
2550 16 Speed	1471	Die.	8485	1575	4	4.19x4.33	239	2500	65.94	540	65.53	56.24	6.22	6979	15.42	11.85	12.83	12.09	10.10
2630	1157	Die.	8430	2630	4	4.190x5.000	276	2500	70.37	540	69.02	58.15	5.38	6470	16.01	10.89	12.10	10.98	8.95
2750 16 Speed	1472	Die.	9625	2125	4	4.19x4.33	239	2500	75.35	540	75.07	63.98	4.75	7581	16.11	12.29	13.13	12.37	10.51
2840	1249	Die.	10500	1695	6	4.020x4.330	329	2500	80.65	1000	76.27	67.47	6.21	8386	16.02	11.52	12.36	11.57	9.59
2940 16 Speed	1351	Die.	10650	1215	6	4.19x4.33	359	2500	81.17	1000	81.46	67.98	4.64	7601	15.91	11.73	12.81	11.91	9.91
2950 16 Speed	1473	Die.	11045	945	6	4.19x4.33	359	2500	85.37	1000	85.50	73.30	6.57	8768	16.33	12.21	13.58	12.45	10.53
4040	1267	Die.	12055	1165	6	4.25x4.75	404	2200	90.80	1002	90.80	77.85	6.36	8936	13.49	10.59	11.24	10.96	9.21
4040 Syncro Range	1359	Die.	12090	1600	6	4.25x4.75	404	2200	90.31	1002	90.31	77.04	8.14	9035	13.87	10.85	11.68	11.29	9.70
4040 Power Shift	1360	Die.	12080	1590	6	4.25x4.75	404	2200	90.79	1000	90.88	78.54	4.45	9195	13.54	10.79	11.50	11.35	9.55
4050 Quad	1474	Die.	13005	835	6	4.57x4.75	466	2200	101.49	1002	101.49	92.05	6.49	10331	15.12	11.72	13.44	12.54	10.64
4050 Powershift	1457	Die.	13030	310	6	4.57x4.75	466	2200	100.95	1002	100.95	88.75	7.88	11058	15.08	11.59	12.60	11.69	9.65
4240	1266	Die.	14090	1695	6	4.57x4.75	466	2200	110.94	1002	110.94	95.18	5.42	11492	14.33	11.09	12.05	11.35	9.52
4240 Syncro Range	1361	Die.	14240	2430	6	4.56x4.75	466	2200	110.81	1002	110.81	95.40	4.90	12240	14.17	11.08	12.00	11.47	9.81
4240 Power Shift	1362	Die.	14260	2440	6	4.56x4.75	466	2200	111.06	1000	111.43	95.65	4.51	12450	14.39	11.25	12.13	11.65	10.13
4250 Quad	1475	Die.	14990	1620	6	4.57x4.75	466	2200	120.21	1002	120.21	108.77	5.71	12858	15.70	12.21	13.90	12.82	10.64
4250 Powershift	1458	Die.	14970	1115	6	4.57x4.75	466	2200	120.86	1002	120.86	105.11	8.36	12802	15.78	12.33	13.44	12.08	10.17
4440	1265	Die.	15540	2270	6	4.57x4.75	466	2200	130.58	1002	130.58	112.56	5.02	13392	15.21	11.73	12.69	11.83	9.90
4440 Powershift	1357	Die.	15775	2655	6	4.57x4.75	466	2200	130.41	1010	130.41	114.16	4.53	13738	15.32	11.83	13.15	12.22	10.60
4450 Quad	1476	Die.	16680	2380	6	4.57x4.75	466	2200	140.33	1002	140.33	125.18	5.01	15069	16.36	13.08	14.42	13.45	11.61
4450 Quad (2)	1476	Die.	16760	2005	6	4.57x4.75	466	2200	140.33	1002	140.33	126.34	5.37	16278	16.36	13.08	14.68	....	....
4450 Powershift	1459	Die.	16745	1795	6	4.57x4.75	466	2200	140.43	1002	140.43	121.94	8.03	15014	16.15	12.94	13.63	12.58	10.60
4450 Powershift (2)	1459	Die.	16625	1225	6	4.57x4.75	466	2200	140.43	1002	140.43	122.51	8.78	16154	16.15	12.94	13.66	....	....
4640	1264	Die.	18120	None	6	4.57x4.75	466	2200	156.30	998	156.30	134.70	6.45	15362	15.61	12.29	13.30	12.15	10.32
4640 Power Shift	1358	Die.	18585	2805	6	4.57x4.75	466	2200	155.96	1000	157.01	137.04	4.81	15989	15.87	12.17	13.53	12.55	10.78
4650 Quad	1477	Die.	19615	1615	6	4.57x4.75	466	2200	165.70	998	165.70	145.58	6.45	16814	16.99	13.90	14.80	13.81	12.11
4650 Quad (2)	1477	Die.	19590	1150	6	4.57x4.75	466	2200	165.70	998	165.70	147.71	5.73	18931	16.99	13.90	14.93	....	....
4650 Powershift	1460	Die.	19660	1075	6	4.57x4.75	466	2200	165.52	998	165.52	143.33	8.12	16746	16.96	13.78	14.25	13.15	11.31
4650 Powershift (2)	1460	Die.	19740	695	6	4.57x4.75	466	2200	165.52	998	165.52	146.06	8.47	18794	16.96	13.78	14.44	....	....
4840	1263	Die.	20370	2240	6	4.57x4.75	466	2200	180.63	1000	181.63	157.09	4.76	17307	15.85	12.47	13.35	12.54	10.76

Ten-Year Summary of Test Reports, 1974-1984

MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cylinders	ENGINE Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	—FUEL CONSUMPTION (HP Hours Per Gallon) @:— Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	—Varying Drawbar Power— Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
John Deere (cont.)																			
4850 Powershift	1461	Die.	21435	2715	6	4.57x4.75	466	2200	192.99	998	192.99	171.27	6.04	18789	17.47	14.50	14.68	13.80	12.01
4850 Powershift (2)	1461	Die.	21440	2280	6	4.57x4.75	466	2200	192.99	998	192.99	172.60	4.26	20810	17.47	14.50	14.93	....	....
8430	1179	Die.	23100	290	6	4.57x4.75	466	2100	178.16	993	178.16	160.39	5.56	22503	15.12	11.98	13.44	12.64	10.72
8440	1323	Die.	26590	None	6	4.57x4.75	466	2100	179.83	993	179.83	163.26	4.97	25383	15.86	12.55	14.29	13.06	11.25
8450	1436	Die.	29150	None	6	4.57x4.75	466	2100	186.98	993	186.98	175.73	4.50	26567	15.69	12.91	14.45	13.53	11.63
8630	1180	Die.	26480	1950	6	5.125x5.00	619	2100	225.59	993	225.59	202.31	4.58	26443	15.34	12.27	13.67	12.80	10.78
8640	1324	Die.	28270	None	6	5.125x5.00	619	2100	228.75	993	228.75	208.38	4.63	27782	15.61	12.40	14.06	13.14	11.16
8650	1435	Die.	30270	None	6	5.125x5.00	619	2100	238.56	993	238.56	221.80	5.55	28257	15.53	12.65	14.26	13.22	11.52
8850	1434	Die.	37700	None	8	5.51x5.00	955	2100	303.99	996	303.99	274.25	5.23	35330	15.74	12.82	14.06	13.34	11.65
(1) With mechanical front wheel drive. (2) Supplementary test with radial ply tires.																			
Deutz																			
D6206	1219	Die.	8780	3410	4	3.937x4.724	230	2050	60.23	540	57.00	52.41	6.04	6944	17.58	15.43	15.10	15.34	14.05
D6806	1220	Die.	11000	4605	4	3.937x4.724	230	2300	68.18	540	62.52	61.87	7.15	9095	16.55	14.73	14.63	15.05	13.52
DX-90	1305	Die.	13150	3210	5	3.94x4.72	287	2300	84.47	1000	80.82	74.19	6.53	8786	16.45	14.15	13.81	14.07	12.39
DX-110	1306	Die.	14940	2360	6	3.94x4.72	345	2300	100.29	1000	93.61	90.82	7.00	11773	15.10	13.71	13.52	14.03	12.60
DX-120	1405	Die.	14950	1980	6	4.02x4.92	374	2400	111.29	1000	101.90	97.41	7.32	12615	16.40	13.84	13.59	13.48	12.03
DX-130	1404	Die.	17630	3690	6	4.02x4.92	374	2300	121.27	1000	121.36	105.63	4.76	14406	17.63	13.77	14.14	13.10	11.26
DX-160	1307	Die.	18710	3870	6	4.02x4.92	374	2200	145.41	1000	140.99	124.81	6.41	15172	17.82	14.47	14.56	13.95	11.93
Fiat																			
420	1293	Die.	6035	2115	3	3.74x4.33	143	2200	41.34	540	37.45	37.71	5.65	5299	14.81	12.93	13.30	13.92	12.35
580	1292	Die.	9210	2580	3	4.055x4.33	168	2700	51.61	540	48.42	44.20	3.38	8899	14.93	12.59	12.14	12.70	10.50
780	1294	Die.	10230	2830	4	4.055x4.33	224	2500	70.36	540	66.30	64.43	4.06	7776	15.41	13.62	13.93	14.17	12.50
Ford																			
1510 (12x4) Manual	1500	Die.	3205	975	3	3.03x3.15	68.2	2800	19.72	540	20.45	16.99	6.92	1952	13.21	10.32	11.14	10.26	8.50
1510 (12x4) Synchro	1501	Die.	3200	915	3	3.03x3.15	68.2	2800	19.98	540	18.68	16.83	6.70	1900	13.50	10.29	10.97	10.27	8.57
1600	1228	Die.	3840	1150	2	3.54x3.94	77.6	2500	23.02	540	19.78	18.53	5.76	2634	14.14	11.82	11.26	11.45	9.72
1700	1325	Die.	3725	1110	2	3.54x3.94	77.6	2500	23.26	540	23.02	20.21	5.54	2801	13.02	11.21	10.89	11.48	10.41
1710 (12x4) Manual	1502	Die.	3510	1040	3	3.31x3.31	85.2	2700	23.88	540	22.19	21.02	7.06	2700	13.42	10.16	11.36	10.76	8.98
1710 (12x4) Synchro	1503	Die.	3530	1060	3	3.31x3.31	85.2	2700	23.79	540	22.34	21.23	5.68	2680	13.18	9.92	11.04	10.56	8.81
1900	1326	Die.	4160	1225	3	3.35x3.31	87.2	2600	26.88	540	25.68	23.49	6.20	2964	12.58	10.38	10.41	10.89	9.32
1910 (12x4) Manual	1507	Die.	4250	1270	3	3.346x3.937	103.9	2500	28.60	540	28.29	25.57	6.78	3340	12.79	10.32	11.14	10.86	9.17
1910 (12x4) Synchro	1508	Die.	4325	1285	3	3.346x3.937	103.9	2500	28.52	540	28.30	25.62	6.79	3449	12.61	10.36	10.99	10.78	9.09
2110 (12x4) Manual	1509	Die.	5105	1470	4	3.346x3.937	138.5	2500	34.79	540	34.91	30.80	7.01	3868	14.01	10.69	11.80	10.95	9.04
2110 (12x4) Synchro	1510	Die.	5110	1450	4	3.346x3.937	138.5	2500	35.11	540	35.56	31.11	6.99	3728	14.01	10.71	11.77	11.11	9.35
2600 6-Speed	1204	Die.	5990	1550	3	4.200x3.800	158	2000	32.38	540	30.51	27.93	5.57	4591	14.88	11.51	12.27	11.74	10.22
2600 6-Speed	1206	Gas.	6000	1645	3	4.200x3.800	158	2000	32.78	540	31.03	28.25	5.57	4198	11.14	7.89	8.83	8.17	6.73
2600 8-Speed	1222	Die.	6000	460	3	4.200x3.800	158	2000	32.47	540	30.76	28.18	5.56	4452	14.62	11.18	11.94	11.22	9.18
2600 8-Speed	1207	Gas.	6000	1710	3	4.200x3.800	158	2000	34.18	540	32.07	30.20	5.49	4455	11.54	8.38	9.45	8.64	7.15
2610 (8x2)	1421	Die.	5940	1780	3	4.20x4.20	175	2000	36.69	540	35.14	31.45	5.52	4473	16.15	12.82	13.03	12.71	10.51
2910 (8x2)	1491	Die.	5925	1295	3	4.20x4.20	175	2000	36.62	540	35.09	30.45	5.77	4237	16.04	12.51	13.18	12.31	11.95
2910 (8x4)	1492	Die.	5950	1305	3	4.20x4.20	175	2000	36.40	540	34.75	31.03	5.68	4223	15.95	12.58	13.00	12.24	10.59
3600 6-Speed	1203	Die.	6860	2445	3	4.20x4.20	175	2000	40.49	540	37.64	34.47	5.96	5114	15.32	12.12	12.84	12.34	9.97
3600 6-Speed	1208	Gas.	6900	2665	3	4.20x4.20	175	2000	40.17	540	37.91	35.53	5.91	5158	11.23	8.07	9.29	8.77	7.05
3600 8-Speed	1221	Die.	6890	1300	3	4.20x4.20	175	2000	40.55	540	38.31	34.10	5.96	5277	15.33	12.40	12.93	12.51	10.36
3600 8-Speed	1226	Gas.	6900	1500	3	4.20x4.20	175	2000	40.62	540	38.29	35.90	5.93	5123	11.42	8.16	9.02	8.57	6.88
3610 (8x2)	1422	Die.	6340	2070	3	4.40x4.20	192	2000	42.26	540	40.17	36.80	5.85	4964	15.95	12.65	13.37	12.69	11.20
3610 (8x4)	1423	Die.	6340	2045	3	4.40x4.20	192	2000	42.47	540	40.01	35.57	8.55	4917	16.26	12.94	12.85	12.44	10.53
3910 (8x2)	1493	Die.	6440	1760	3	4.40x4.20	192	2000	42.62	540	40.39	37.02	5.93	4931	15.86	12.48	13.33	12.66	10.71

3910 (8x4)	1494	Die.	8435	1735	3	4.40x4.20	192	2000	42.67	540	41.16	36.22	5.85	4934	15.64	12.63	13.16	12.34	10.59
4100 8-Speed	1202	Die.	7500	2590	3	4.20x4.40	183	2000	45.46	540	41.13	41.14	4.63	5557	15.59	11.57	12.57	11.96	10.36
4110 (8x2)	1424	Die.	7500	2850	3	4.40x4.40	201	2200	48.33	540	42.65	41.25	4.51	5681	16.37	12.64	13.26	12.34	10.76
4110 (8x4)	1425	Die.	7500	2785	3	4.40x4.40	201	2200	49.26	540	44.06	40.59	4.92	5691	16.06	12.32	12.92	12.13	10.44
4600 8-Speed	1223	Die.	8220	2340	3	4.40x4.40	201	2200	52.44	540	46.31	45.57	5.24	6342	14.59	11.49	11.82	11.85	10.77
4610 (8x2)	1426	Die.	8190	3095	3	4.40x4.40	201	2200	52.52	540	46.72	44.51	5.17	6402	16.78	13.17	13.96	13.25	11.60
4610 (8x4)	1427	Die.	8230	3085	3	4.40x4.40	201	2200	52.32	540	47.30	43.36	5.62	6534	16.83	13.05	13.53	12.77	11.18
5600 8-Speed	1201	Die.	9690	3785	4	4.20x4.40	233	2100	60.46	540	56.85	52.22	5.49	7105	15.77	12.83	12.87	12.88	11.02
5600 16-Speed	1227	Die.	9690	2380	4	4.20x4.20	233	2100	58.46	540	56.00	49.79	5.36	7140	15.06	11.94	12.07	11.94	10.42
5610 (16x4)	1428	Die.	9700	2325	4	4.40x4.20	256	2100	62.54	540	60.58	54.63	5.89	7408	15.57	12.38	12.82	12.44	10.30
5610 (16x8)	1429	Die.	9545	3130	4	4.40x4.20	256	2100	62.57	540	59.99	53.70	6.57	7578	15.45	12.11	12.93	12.03	10.09
6600 8-Speed	1217	Die.	9660	3780	4	4.40x4.20	256	2100	70.56	1000	70.07	61.36	8.91	7131	15.43	12.86	12.28	12.71	11.35
6600 16-Speed	1224	Die.	9700	2680	4	4.40x4.20	256	2100	68.10	1000	68.06	58.74	5.22	7267	14.97	12.64	12.05	12.77	11.05
6610 (16x4)	1430	Die.	9700	2270	4	4.40x4.40	268	2100	72.13	540	68.27	61.17	5.62	7887	15.64	13.14	13.40	12.90	10.77
6610 (16x8)	1431	Die.	9700	2850	4	4.40x4.40	268	2100	72.30	540	69.20	62.64	6.49	7948	15.43	12.91	13.18	12.84	10.87
6700 16-Speed	1244	Die.	9690	1180	4	4.40x4.20	256	2100	68.94	1000	68.62	58.06	7.55	6787	13.77	12.23	11.24	12.38	11.16
7600 16-Speed	1225	Die.	10760	3320	4	4.40x4.20	256	2100	84.79	1000	85.16	67.95	5.61	7779	15.95	12.35	12.44	11.77	9.92
7610 (16x4)	1432	Die.	10800	2220	4	4.40x4.40	268	2100	86.95	1000	86.79	74.22	5.53	8804	15.75	12.44	13.36	12.29	10.35
7700 16-Speed	1242	Die.	10800	2400	4	4.40x4.20	255	2100	84.38	1000	84.29	71.57	7.28	7688	15.24	11.65	11.92	11.21	9.71
7710 (16x8)	1433	Die.	10800	2150	4	4.40x4.40	268	2100	86.62	1000	86.55	73.24	8.42	8638	15.87	12.60	13.67	12.26	10.35
8700 16-Speed	1245	Die.	14760	2490	6	4.40x4.40	401	2300	110.58	1000	99.58	100.12	8.94	11581	15.02	11.91	12.37	12.28	10.93
9700 16-Speed	1243	Die.	17480	4620	6	4.40x4.40	401	2200	135.64	1000	129.25	118.08	5.55	15010	15.95	11.77	12.63	11.97	10.34
TW-5	1514	Die.	14430	1340	6	4.40x4.40	401	2300	105.74	1000	96.83	96.27	8.52	12249	15.52	12.42	13.14	12.91	11.38
TW-10	1301	Die.	15190	2325	6	4.40x4.40	401	2300	110.24	1000	101.09	97.35	5.23	12006	14.86	11.50	12.17	11.91	10.20
TW-15	1515	Die.	16010	2755	6	4.40x4.40	401	2200	121.40	1000	117.83	107.24	8.09	13247	16.90	12.39	13.83	12.80	10.88
TW-15 FWD (2)	1536	Die.	16680	2310	6	4.40x4.40	401	2200	121.25	1000	115.58	107.35	5.21	15939	16.95	12.39	13.96	12.65	10.68
TW-20	1300	Die.	17180	3945	6	4.40x4.40	401	2200	135.60	1000	131.43	121.47	7.85	14155	16.22	11.78	13.08	12.04	10.09
TW-25	1516	Die.	17965	2530	6	4.40x4.40	401	2200	140.68	1000	135.70	126.73	5.25	14871	16.66	12.58	13.89	13.02	11.20
TW-30	1299	Die.	19830	5205	6	4.40x4.40	401	2200	163.28	1000	157.04	144.17	8.32	16553	16.76	12.49	13.67	12.58	10.79
TW-35	1517	Die.	20270	4090	6	4.40x4.40	401	2200	170.30	1000	166.67	147.49	5.30	17054	17.41	13.81	14.31	13.91	12.18
TW-35 FWD (2)	1537	Die.	20270	3130	6	4.40x4.40	401	2200	171.12	1000	162.55	147.55	5.44	18823	17.58	14.09	14.42	13.71	12.04
FW-20	1291	Die.	31000	1385	8	4.625x4.125	555	2850	---	---	---	156.85	5.45	27155	....	....	12.12	11.69	10.15
FW-30	1288	Die.	31720	410	8	5.500x4.750	903	2800	(1)	---	---	212.02	6.64	27803	....	....	13.71	12.24	10.08
				FW 30 without PTO								220.38	5.95	28302	....	....	14.16	12.73	10.96
FW40	1290	Die.	32950	2320	8	5.500x4.750	903	2800	---	---	---	236.78	6.80	28245	....	....	13.83	12.84	10.73
FW60	1289	Die.	33970	2870	8	5.500x4.750	903	2800	---	---	---	285.57	7.45	29304	....	....	14.90	13.38	11.27

(1) Equipped with controlled, hydrostatic pto with 105 output horsepower at 1000 rpm. (2) Drawbar test with front wheel assist engaged.

Hesston Fiat

466 12 Speed	1484	Die.	6670	950	3	3.94x4.33	158	2500	45.13	540	42.68	40.03	5.79	(1)	16.74	12.41	13.66	12.87	10.95
480-8 DT and																			
480-8 12 & 8 Speed	1385	Die.	7805	2485	3	3.94x4.33	158	2800	42.58	540	40.36	37.07	5.07	5265	16.93	12.27	13.34	12.54	10.64
60-66 DT	1531	Die.	7460	1580	3	4.094x4.527	178.8	2500	51.49	540	48.51	45.51	5.53	3031	17.13	13.11	14.19	13.30	11.38
666 12 Speed	1485	Die.	8715	2425	4	3.94x4.33	211	2500	62.40	540	60.30	54.31	5.51	(2)	17.00	13.00	13.79	13.20	11.73
680DT & 680 8 Speed	1362	Die.	10000	2660	4	3.94x4.33	211	2500	62.47	1000	61.20	53.65	5.44	6252	17.40	14.19	14.80	14.20	12.45
780 DT and																			
780 8-Speed	1386	Die.	10100	3920	4	4.055x4.33	224	2500	70.57	540	66.67	62.06	7.61	6965	16.71	13.96	13.72	13.86	12.26
80-66 DT	1532	Die.	9400	2685	4	4.094x4.527	236.5	2500	70.43	1000	68.91	62.73	5.47	4260	17.60	14.08	14.96	14.21	12.66
880 DT-5 &																			
880-5 12 Speed	1353	Die.	11580	2810	5	4.055x4.331	280	2500	81.32	1000	80.95	70.73	7.63	7554	16.27	13.23	13.50	13.44	11.65
980DT & 980 16 Speed	1354	Die.	12645	3795	6	3.937x4.33	316	2400	91.12	996	91.12	77.42	5.00	8351	16.90	13.92	14.25	13.59	12.25
1180 DT Turbo	1450	Die.	16885	1935	6	4.055x4.33	335	2550	107.46	1000	104.22	93.71	4.37	12905	16.40	12.54	14.16	12.74	10.42
1380DT, 1380	1409	Die.	16995	1795	6	4.055x4.33	335	2400	123.16	1000	123.54	104.97	8.08	13105	16.49	13.30	13.60	13.01	11.62
140-90 DT Turbo	1533	Die.	16425	375	6	4.094x4.527	358	2500	123.35	1000	122.80	105.81	5.05	12687	17.12	13.04	14.40	13.16	11.13
1580DT Turbo	1451	Die.	19080	2480	6	4.528x5.118	494	2200	141.44	1000	136.14	124.15	5.48	15342	17.28	13.49	14.70	13.53	11.47
160-90 DT Turbo	1534	Die.	18370	1075	6	4.528x5.118	494	2200	141.71	1000	143.91	122.23	5.32	13848	17.53	13.61	14.38	13.62	11.84
1880DT, 1880	1410	Die.	19710	3020	6	4.528x5.118	494	2200	162.48	1000	159.83	138.81	5.44	15656	17.35	13.87	14.53	13.58	12.07
180-90 DT Turbo	1535	Die.	19725	2430	6	4.528x5.118	494	2200	162.87	1000	158.68	140.45	6.40	14713	17.86	14.13	14.82	14.25	12.29

(1) 2WD, 4969; 4WD, 5833. (2) 2WD, 6611; 4WD, 7433.

International Harvester

Hydro 84	1316	Die.	9120	3115	4	3.937x5.062	246	2400	58.73	540	58.88	43.59	7.80	8572	14.01	10.50	10.13	9.82	8.34
Hydro 86	1337	Die.	10710	2545	6	3.875x4.375	310	2400	70.89	540	66.84	54.10	4.03	8815	14.18	10.23	9.92	9.55	8.24

Ten-Year Summary of Test Reports, 1974-1984

MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	ENGINE No. of Cylinders	ENGINE Bore and Stroke	ENGINE Displacement Cu. in.	ENGINE Rated RPM Dwbr.	ENGINE Max. PTO HP @ Rated Engine RPM	ENGINE Std. PTO RPM	ENGINE Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	FUEL CONSUMPTION (HP Hours Per Gallon) @:– Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Varying Drawbar Power– Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
International Harvester (cont.)																			
Hydro 100	1158	Die.	12765	635	6	4.300x5.000	436	2400	104.17	1000	101.30	82.13	6.42	9801	14.83	10.50	10.35	10.19	8.95
Hydro 186	1257	Die.	13430	295	6	4.300x5.000	436	2400	105.02	1000	100.31	82.77	6.56	11312	13.68	10.06	9.83	9.83	8.46
284	1277	Gas.	3596	1166	4	2.756x2.992	71.3	2600	25.75	1000	24.33	20.64	4.02	2561	11.62	9.54	9.77	8.97	7 52
284 8 Speed	1387	Die.	3600	860	3	3.27x3.94	99	2600	27.47	540	23.92	23.52	5.71	2523	14.40	10.91	10.99	10.53	9.18
484 Utility	1312	Die.	7710	2710	3	3.875x5.06	179	2200	42.42	540	41.79	38.06	4.78	5500	14.81	11.85	12.75	12.39	10.63
584 Utility & Rowcrop	1313	Die.	8850	3185	4	3.875x4.38	206	2300	52.54	540	50.96	47.47	5.07	6859	15.23	12.34	13.41	12.95	11.10
684 Utility & Rowcrop	1314	Die.	9660	3825	4	3.875x5.06	239	2400	62.52	540	58.75	55.92	5.29	6858	15.55	12.21	13.27	13.02	11.28
686 10 Speed	1336	Die.	10340	2360	6	3.875x4.375	310	2000	66.36	543	66.36	58.81	5.08	8043	16.07	13.16	13.93	13.27	11.53
784 Rowcrop	1315	Die.	9920	3830	4	3.937x5.062	246	2400	67.48	1000	64.09	58.65	5.18	8105	16.06	12.75	13.25	12.77	11.07
786 16 Speed	1388	Die.	11930	340	6	3.875x5.0625	358	2400	80.20	1000	77.41	70.25	4.74	9968	15.72	11.40	12.72	11.88	10.00
884 Rowcrop	1376	Die.	10150	3945	4	3.937x5.51	268	2400	72.91	1000	69.76	65.39	5.54	8116	15.76	12.47	13.48	12.91	11.05
886	1254	Die.	13040	970	6	3.875x5.085	360	2400	86.14	1000	83.16	76.16	4.70	10485	14.29	10.55	11.77	10.92	9.21
886 16 Speed	1338	Die.	13450	1710	6	3.875x5.063	358	2400	86.57	1000	83.91	76.25	4.69	10807	16.01	11.77	12.97	12.21	10.62
886 16 Speed (1)	1339	Die.	13450	1710	6	3.875x5.063	358	2400	90.56	1000	88.23	80.13	4.69	10930	15.84	11.98	12.81	12.38	10.86
(1) Serial No. 2490208 U17026 and up.																			
986	1255	Die.	14000	970	6	4.30x5.00	436	2400	105.68	1000	104.18	94.60	4.98	12176	15.56	11.34	12.65	11.72	10.02
1066 Turbo	1124	Die.	15260	1945	6	4.30x4.75	414	2600	125.68	1000	119.20	108.87	7.03	13000	16.37	11.32	12.78	11.97	9.99
1086 w/Radial Tires	1247	Die.	15640	2915	6	4.30x4.75	414	2400	131.41	1000	133.67	116.28	4.40	13503	16.39	11.90	13.28	12.36	10.45
1066 w/Bial Ply Tires	1247	Die.	15640	3100	6	4.30x4.75	414	2400	131.41	1000	133.67	114.14	6.66	12137	16.39	11.90	12.83	12.08	10.52
1566 Turbo	1174	Die.	18260	3065	6	4.30x5.00	436	2600	161.01	1000	162.31	140.35	5.64	15774	16.16	11.51	12.55	11.69	9.86
1568	1175	Die.	17350	2400	8	4.500x4.313	550	2600	150.70	1000	147.79	133.79	5.69	14918	14.99	12.08	13.00	12.59	10.80
1586 w/Radial Tires	1248	Die.	17600	2480	6	4.30x5.00	436	2500	161.55	1000	156.09	140.65	5.55	16665	16.51	12.28	13.02	12.38	10.51
1586 w/Bias Ply Tires	1248	Die.	17600	3010	6	4.30x5.00	436	2500	161.55	1000	156.09	140.08	6.05	15124	16.51	12.28	12.74	12.38	10.54
3088 16 Sp	1551	Die.	12500	560	6	3.875x5.062	358	2400	81.35	1000	80.28	71.20	5.16	5100	16.03	11.36	12.84	11.59	9.76
3288	1438	Die.	13560	1800	6	3.875x5.062	358	2400	90.46	1000	88.33	80.72	6.11	11486	15.94	11.69	13.16	12.31	10.27
3388	1319	Die.	17850	430	6	4.30x5.00	436	2400	130.61	1000	128.59	114.42	6.67	16764	16.85	12.00	13.52	12.17	10.09
3488 Hydro	1439	Die.	13940	1060	6	4.30x5.35	466	2400	112.56	1000	107.11	83.43	6.50	12152	15.28	10.64	10.00	9.73	8.43
3588	1320	Die.	18890	1270	6	4.30x5.35	466	2400	150.41	1000	152.07	130.94	6.65	17589	16.98	12.19	13.13	12.20	10.30
3688	1440	Die.	14335	1135	6	4.30x5.00	436	2400	113.72	1000	112.48	100.28	7.36	12250	15.75	11.82	13.30	12.35	10.38
3788 12 Speed	1377	Die.	20820	2200	6	4.30x5.35	466	2500	170.57	1000	166.39	146.43	7.49	19069	17.12	12.22	13.24	12.25	10.06
4386	1256	Die.	24930	None	6	4.30x5.35	466	2600	....	....	....	176.02	8.71	23321	....	....	12.43	11.92	10.18
4568	1216	Die.	29870	4120	8	5.31x4.50	798	2600	....	....	....	235.72	6.76	27995	....	....	12.89	11.79	9.73
4786	1317	Die.	34350	4150	8	5.31x4.50	798	2600	....	....	....	265.55	4.79	33468	....	....	12.80	11.92	9.86
5088 (2)	1419	Die.	16250	240	6	4.30x5.00	436	2400	136.12	1005	136.12	121.17	5.06	14960	15.32	11.65	13.23	12.04	9.90
5288	1420	Die.	18585	1530	6	4.30x5.35	466	2400	162.60	1005	162.60	142.37	5.27	17577	16.07	12.62	13.70	12.77	10.75
5488	1441	Die.	20005	2765	6	4.30x5.35	466	2400	187.22	1005	187.22	164.82	5.27	18646	16.20	13.00	14.16	13.15	11.21
(2) Drawbar information is from test run with radial ply tires.																			
Kubota																			
L185	1285	Die.	3370	1430	2	3.000x3.23	45.3	2800	15.33	540	14.07	13.03	5.57	1939	13.60	10.90	10.38	10.82	9.26
L185DT	1286	Die.	3415	1283	2	3.000x3.23	45.3	2800	15.45	540	14.16	12.58	3.74	1871	13.49	11.00	10.22	10.53	9.04
L235	1406	Die.	3715	1280	3	3.00x3.23	68	2600	19.59	540	19.63	16.05	4.68	2440	14.33	11.34	11.33	10.85	9.23
L245	1283	Die.	3694	1496	3	3.00x3.23	68	2800	22.06	540	20.11	18.66	5.74	2067	13.98	11.07	10.74	10.70	9.16
L245DT	1284	Die.	3792	1410	3	3.00x3.23	68	2800	22.35	540	20.15	18.55	5.78	1903	14.33	11.21	10.97	10.61	9.37
L275	1407	Die.	4055	1430	3	3.23x3.23	79.3	2600	23.42	540	23.01	19.70	4.84	2717	14.57	11.55	11.62	11.07	9.95
L285	1198	Die.	4030	1585	4	2.992x3.228	91	2400	26.45	540	23.58	22.94	6.62	3134	14.63	12.16	11.78	12.16	10.65
L295DT and L295 8 Speed	1370	Die.	4700	1305	3	3.23x3.23	79.3	2800	26.46	540	24.91	22.82	4.34	3155	14.59	11.75	11.57	11.39	9.58
L305DT and L305 8 Speed	1371	Die.	5360	2070	3	3.23x3.23	79.3	2800	26.21	540	25.14	22.96	4.16	3918	13.83	11.14	11.15	11.13	9.46
L345DT and																			

L345 8 Speed	1372	Die.	5435	2000	4	3.00x3.23	90.7	2800	29.35	540	28.80	26.72	4.62	3795	12.76	10.58	10.68	10.81	9.15
M4050DT and																			
M4050 8 Speed	1495	Die.	7215	2275	6	3.23x3.23	158.5	2600	45.74	540	42.10	37.61	5.99	(1)	15.06	11.57	11.67	11.52	9.88
M4500DT &																			
M4500 16 Speed	1348	Die.	7800	2635	6	3.23x3.23	158.5	2600	49.72	540	44.49	42.50	6.16	4812	15.19	12.22	11.90	12.02	10.77
M4950DT &																			
M4950 12 Speed	1496	Die.	8195	2395	6	3.35x3.23	170	2600	49.57	540	45.47	41.43	4.68	(2)	14.70	11.21	11.49	11.15	9.26
M5500DT and																			
M5500 16 Speed	1369	Die.	8710	3210	3	4.134x4.528	182	2400	53.99	540	49.18	46.96	5.51	6287	16.22	12.44	13.05	12.77	11.05
M5950DT &																			
M5950 12 Speed	1497	Die.	9220	3100	3	4.29x4.53	196	2400	58.00	540	52.81	49.29	5.09	(3)	17.08	13.44	13.64	13.53	11.83
M6950DT &																			
M6950 12 Speed	1498	Die.	9575	2530	4	4.13x4.53	243	2400	66.44	540	63.96	56.74	5.02	(4)	16.98	13.26	13.72	13.28	11.33
M7500DT &																			
M7500 16 Speed	1349	Die.	9510	3530	4	4.13x4.53	243	2400	72.34	540	66.54	61.29	6.65	6327	17.83	14.15	13.93	14.20	12.40
M7950DT &																			
M7950 12 Speed	1499	Die.	10305	3205	4	4.29x4.53	262	2400	75.44	540	69.32	65.24	5.26	(5)	17.14	13.57	13.88	13.82	11.93
(1) M4050, 4259; M4050DT, 6070. (2) M4950, 5292; M4950DT, 6750. (3) M5950, 5749; M5950DT, 8350. (4) M6950, 6517; M6950DT, 8465. (5) M7950, 7244; M7950DT, 9641.																			
Lamborghini																			
1056DT	1269	Die.	12050	1700	6	3.86x4.72	331	2220	92.13	1000	89.98	79.51	6.86	9135	15.16	13.02	12.45	12.74	10.93
Leyland																			
245	1177	Die.	7850	1970	3	3.600x5.000	152.7	2250	39.73	540	36.38	35.09	4.47	5056	16.30	12.60	13.02	12.67	11.29
255	1176	Die.	8610	2310	4	3.858x4.921	230	2200	47.91	540	43.85	43.00	6.58	5891	16.42	11.10	12.78	11.81	9.50
472 & 272 9 Speed	1341	Die.	11990	4580	4	3.858x4.921	230	2200	63.52	540	58.50	53.27	5.91	7224	14.97	12.26	11.32	11.67	10.48
482 & 282 9 Speed	1340	Die.	12000	4590	4	3.858x4.921	230	2200	74.26	540	70.86	61.19	5.86	7032	17.58	12.63	12.70	12.10	10.09
2100	1178	Die.	13260	4350	6	3.860x4.920	344.7	2100	88.40	1000	83.30	75.70	4.95	8617	16.29	13.20	13.16	13.24	11.24
Long																			
360	1298	Die.	6410	1930	3	3.74x4.33	143	2400	36.16	540	31.06	31.91	5.20	4808	14.41	11.97	12.45	12.13	10.48
510	1415	Die.	8210	3925	3	4.02x4.33	164.5	2400	49.15	540	46.91	43.27	5.14	6040	15.74	13.48	13.15	13.52	12.24
510DTC	1416	Die.	9100	3835	3	4.02x4.33	164.5	2400	49.35	540	46.41	41.37	4.63	5635	16.47	13.72	13.68	13.30	11.69
610	1417	Die.	8985	4290	4	4.02x4.33	219	2400	64.33	540	60.57	57.48	5.37	7018	15.93	13.46	13.58	13.51	11.92
900 and 910	1163	Die.	12575	4375	4	4.33x4.72	278	2200	72.88	1000	72.86	62.50	6.53	7843	13.06	12.15	10.97	13.00	11.38
Massey-Ferguson																			
MF154-4	1411	Die.	6820	1615	3	3.60x5.00	152	2250	42.52	540	40.38	35.40	4.52	4144	17.26	13.41	13.79	13.00	11.42
MF164-4 12 Speed	1392	Die.	7775	1395	4	3.875x5.0	236	2200	62.45	540	59.56	52.38	7.13	5500	16.41	12.37	12.61	12.11	10.69
MF205 6 Speed	1363	Die.	2840	935	2	3.46x3.46	65.2	2400	16.56	540	16.34	13.45	4.39	1995	12.97	9.62	9.98	9.65	8.03
MF205-4 6 speed	1364	Die.	3120	905	2	3.46x3.46	65.2	2400	16.40	540	16.18	13.57	4.86	2131	12.83	9.69	10.04	9.57	8.02
MF210 12 Speed	1365	Die.	3550	1090	2	3.62x3.74	77.1	2500	21.96	540	21.23	18.08	5.81	2159	13.61	11.04	10.84	10.53	9.36
MF210-4 12 Speed	1366	Die.	3765	1030	2	3.62x3.74	77.1	2500	21.77	540	21.02	17.60	6.91	2158	13.18	10.75	9.97	10.44	8.61
MF220 12 Speed	1367	Die.	4220	1455	2	3.82x3.94	90.3	2500	26.37	540	25.52	23.95	4.34	3287	13.36	11.07	11.22	11.60	10.17
MF220-4 12 Speed	1368	Die.	4487	1307	2	3.82x3.94	90.3	2500	26.48	540	26.06	22.91	3.84	3496	14.09	11.56	11.09	11.55	10.02
MF230	1215	Gas.	4870	1030	4	3.375x4.062	145	2000	34.34	540	31.29	29.58	5.08	3717	11.85	8.72	9.89	8.90	7.85
MF230	1214	Die.	5110	1110	3	3.60x5.00	153	2000	34.53	540	30.80	29.66	7.64	4030	18.18	14.81	15.06	14.74	12.87
MF235	1194	Gas.	5785	1655	4	3.375x4.062	145	2250	41.13	540	33.87	35.29	5.86	4294	10.49	7.99	8.69	8.07	6.69
MF235	1187	Die.	5860	1725	3	3.60x5.00	152	2250	42.39	540	35.29	36.29	5.84	4281	16.78	13.52	13.80	13.39	11.56
MF240 8 Sp.	1519	Die.	4985	770	3	3.60x5.00	152	2000	34.77	540	31.89	29.39	5.30	3824	16.10	13.18	13.72	13.35	11.59
MF245	1251	Die.	6150	2100	3	3.60x5.00	152	2250	42.90	540	36.50	36.75	5.92	4279	16.25	12.72	12.43	12.79	11.13
MF245	1252	Gas.	6020	2120	4	3.375x4.062	145	2250	41.09	540	34.15	35.50	5.90	4298	11.74	9.07	9.50	9.07	7.88
MF250 8 Sp.	1520	Die.	5760	1175	3	3.60x5.00	152	2250	40.86	540	36.93	35.07	5.81	4297	15.80	12.38	12.92	12.50	10.72
MF254 12 Speed	1478	Die.	7275	1790	3	3.60x5.00	152	2250	43.36	540	40.71	35.14	5.82	3844(1)	16.58	13.43	12.84	12.51	10.62
MF255	1190	Gas.	7280	1140	4	3.875x4.500	212	2000	50.01	540	47.14	43.49	5.28	5668	10.91	8.00	8.94	8.54	6.72
MF255	1189	Die.	7130	1160	4	3.600x5.000	203	2000	50.69	540	45.55	43.72	5.28	5257	15.88	13.32	13.44	13.36	12.24
MF255 12-Speed	1250	Die.	7310	895	4	3.875x5.00	236	2000	52.68	540	48.37	44.75	7.89	5591	16.92	12.70	13.34	12.82	11.03
MF265	1188	Die.	8200	1815	4	3.875x5.00	236	2000	60.73	540	54.76	51.87	5.23	6248	15.88	13.44	13.52	13.51	12.16
MF270 8 Sp.	1521	Die.	8195	1295	4	3.875x5.00	236	2000	55.85	540	52.75	47.08	4.96	5896	16.79	12.99	13.44	13.10	11.22
MF274 12 Speed	1479	Die.	8190	2205	4	3.875x5.00	236	2200	55.39	540	54.26	46.76	6.56	4719(2)	17.25	12.80	13.76	12.66	10.59
MF275	1193	Die.	9330	2720	4	3.975x5.000	248	2000	67.43	540	61.76	60.16	5.16	7292	14.18	12.51	13.04	13.22	11.63
MF285	1171	Die.	11760	4110	4	4.500x5.000	318	2000	81.96	1000	81.96	70.53	7.77	8846	14.98	12.68	12.85	12.90	11.34
MF290 12 Sp.	1522	Die.	9070	3130	4	3.975x5.00	248	2200	65.92	540	59.37	56.36	6.44	7654	16.58	12.75	13.24	12.76	10.98
MF294 12 Speed	1480	Die.	8645	1925	4	3.975x5.00	248	2100	67.39	540	64.94	56.28	5.77	5665(3)	17.58	14.53	14.68	13.95	12.54
MF298 8 Sp.	1523	Die.	11040	3070	4	4.50x5.00	318	2000	79.54	1000	73.66	69.74	5.14	8712	16.31	12.88	13.47	13.14	11.55

Ten-Year Summary of Test Reports, 1974-1984

MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cylinders	ENGINE Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	—FUEL CONSUMPTION (HP Hours Per Gallon) @:— Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	—Varying Drawbar Power— Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Massey-Ferguson (cont.)																			
MF296 12 Sp.	1524	Die.	10950	2935	4	4.50x5.00	318	2000	79.26	1000	74.25	67.85	7.73	8663	15.72	11.93	12.40	12.39	10.79
MF670 & 270 12 Sp.	1538	Die.	9200	480	4	3.875x5.00	236	2000	55.62	1000	51.44	46.05	4.87	6382	16.39	12.37	12.93	12.10	10.26
MF690 12 Sp.	1539	Die.	10295	2275	4	3.975x5.00	248	2200	65.68	540	62.25	54.78	4.77	7650	15.51	11.96	12.01	11.79	9.82
MF698 12 Sp.	1540	Die.	12125	2185	4	4.50x5.00	318	2000	78.83	540	74.41	68.38	4.56	8707	15.91	11.91	12.55	12.24	10.59
MF699 12 Sp.	1541	Die.	12935	2610	6	3.875x5.000	354	2200	85.79	540	78.00	71.71	4.69	8712	16.96	12.87	13.51	12.66	10.64
MF1505	1172	Die.	20970	3010	8	4.500x5.000	636	2800	174.46	1000	175.95	154.10	6.98	17226	14.55	11.41	12.27	11.43	9.54
MF1805	1173	Die.	22790	4790	8	4.500x5.000	636	2800	192.65	1000	191.60	170.17	6.95	18781	14.77	12.14	12.76	12.41	10.77
MF2640 16 Speed	1481	Die.	16380	3945	6	3.875x5.00	354	2400	90.95	1000	87.60	74.83	6.58	10623(4)	15.81	11.67	12.15	11.46	9.70
MF2675, 8-Speed	1321	Die.	14280	1930	6	3.875x5.00	354	2500	100.84	1000	95.00	86.18	5.91	10226	15.00	11.14	11.48	11.57	10.01
MF2675, 24-Speed	1309	Die.	14495	2065	6	3.875x5.00	354	2500	103.29	1000	96.67	87.47	5.09	9674	15.43	11.56	11.76	11.49	9.95
MF2705, 8-Speed	1322	Die.	16800	4295	6	3.875x5.00	354	2500	121.11	1000	114.44	101.47	6.17	12588	16.84	11.22	12.54	11.30	9.45
MF2705, 24-Speed	1310	Die.	17490	4895	6	3.875x5.00	354	2500	122.20	1000	115.85	104.23	5.30	13085	16.65	11.22	12.74	11.27	9.23
MF2745	1311	Die.	19490	4300	8	4.25x4.75	539	2600	143.40	1000	132.21	125.17	5.51	15386	15.40	10.62	11.96	11.13	9.39
MF2775	1278	Die.	20440	4210	8	4.63x4.75	640	2600	165.95	1000	149.86	143.70	5.72	17407	16.05	11.50	12.57	11.52	9.85
MF2775 8 Speed	1389	Die.	20170	4365	8	4.63x4.75	640	2600	162.09	1000	146.87	139.68	5.73	16766	15.78	11.19	12.45	11.68	9.56
MF2805 24-Speed	1258	Die.	21170	5540	8	4.63x4.75	640	2500	194.62	1000	181.77	160.72	7.10	17369	16.29	11.33	12.21	11.14	9.27
MF2805 8 Speed	1399	Die.	21430	5395	8	4.63x4.75	640	2500	190.81	1000	186.29	164.58	5.41	17647	16.59	10.97	12.41	11.43	9.58
MF3505 16 Sp.	1511	Die.	13195	260	6	3.875x5.00	354	2400	91.50	1000	87.47	74.79	6.54	8344	15.53	11.40	11.55	10.90	9.19
MF3525 16 Sp.	1512	Die.	14645	1545	6	3.875x5.00	354	2400	108.01	1000	103.67	91.22	6.45	9322	16.67	11.65	12.65	11.53	9.31
MF3545 16 Sp.	1513	Die.	17235	3935	6	3.875x5.00	354	2400	126.72	1000	122.15	105.16	6.82	10563	17.01	12.11	12.86	11.47	9.64
MF4800 12 & 18 Speed	1342	Die.	30520	None	8	5.5x4.75	903	2600	179.31	1000	172.88	159.08	4.82	25294	15.10	10.12	12.13	10.73	8.39
MF4840 12 & 18 Speed	1343	Die.	30920	None	8	5.5x4.75	903	2600	210.67	1000	210.61	186.36	4.84	28191	15.57	10.77	12.41	11.25	9.32
MF4880 12 & 18 Speed	1344	Die.	32450	1360	8	5.5x4.75	903	2600	272.81	1000	267.38	244.57	6.54	29272	16.80	11.51	13.50	11.98	9.58
MF-4900 18 Speed	1391	Die.	33940	2975	8	5.5x4.75	903	2600	320.55	1000	323.88	278.78	6.53	30090	16.80	11.95	13.26	11.82	9.87
(1) 5279 with front drive engaged. (2) 6194 with front drive engaged. (3) 7253 with front drive engaged. (4) 13707 with front drive engaged.																			
Minneapolis-Moline																			
G955	1161	Die.	12060	None	6	4.375x5.000	451	1800	98.38	1000	98.82	83.40	5.44	8374	13.92	11.93	11.26	11.76	10.29
Same																			
Panter 4WD	1185	Die.	12000	2772	5	3.860x4.720	276	2200	80.02	,000	79.10	66.67	5.75	10389	14.79	12.74	12.40	12.30	10.00
Tiger 100	1268	Die.	11620	2500	5	4.13x4.72	317	2200	90.45	1000	89.42	78.84	6.35	9116	15.48	13.22	12.41	13.08	11.26
Buffalo 4WD	1186	Die.	13795	3708	6	4.130x4.720	380	2200	104.94	1000	104.94	88.24	4.24	10941	15.23	12.78	12.47	12.44	10.76
Satoh																			
S750DD & S750D 9 Speed	1347	Die.	5550	1620	3	3.386x4.016	108.4	2500	33.45	540	28.11	28.99	5.93	4295	11.92	10.89	9.86	11.18	9.58
Steiger																			
Wildcat III ST-210 & RC-210	1237	Die.	22260	None	8	4.500x5.000	636	2800	....	....	....	171.44	5.84	21052	....	....	12.71	12.58	10.82
Bearcat II	1162	Die.	23020	1585	8	4.500x5.000	636	2800	....	....	....	180.69	6.57	22622	....	....	12.79	12.37	10.82
Bearcat III ST-220	1246	Die.	29380	None	6	5.500x6.000	855	2100	....	....	....	175.58	4.84	26936	....	....	13.24	12.60	11.04
Bearcat III ST-225(1)	1414	Die.	30005	465	6	4.75x6.00	638	2100	....	....	....	197.69	5.47	28805	....	....	13.99	13.54	11.65
Bearcat III PT225	1272	Die.	30825	None	6	4.75x6.00	638	2200	(3)	....	....	180.86	6.33	29749	....	....	12.02	10.80	9.29
Bearcat IV KM-225	1542	Die	33820	5420	6	4.921x5.354	611	2100	....	....	....	203.31	4.82	31556	....	....	16.43	15.28	13.12
Cougar II	1170	Die.	27995	1305	6	4.75x6.00	638	2200	....	....	....	228.15	4.44	26432	....	....	13.15	12.77	11.59
Cougar III ST-250	1239	Die.	29800	None	6	4.75x6.00	638	2200	....	....	....	210.35	6.38	26612	....	....	12.74	11.90	10.36
Cougar III ST-250(2)	1452	Die.	29965	None	6	4.75x6.00	638	2100	....	....	....	215.98	6.11	29539	....	....	15.16	14.40	12.76
Cougar III ST-251	1233	Die.	30840	None	6	5.500x6.000	855	2100	....	....	....	205.82	7.98	26880	....	....	14.74	13.69	11.60
Cougar III PT270	1273	Die.	32210	1495	6	4.75x6.00	638	2200	(3)	....	....	219.39	6.29	30122	....	....	12.73	11.81	10.23
Cougar III ST-270	1238	Die.	29930	None	6	4.75x6.00	638	2200	....	....	....	228.96	6.36	25371	....	....	13.32	12.62	10.96

Cougar III PTA 280	1402	Die.	33675	2895	6	5.50x6.00	855	2100	....	....	....	224.92	5.54	32625	....	....	13.74	12.54	10.44
Cougar III PTA-280	1413	Die.	33150	2370	6	5.40x6.50	893	2100	....	....	....	236.55	7.07	32085	....	....	14.24	13.14	11.19
Cougar III ST-280	1401	Die.	33105	2625	6	5.50x6.00	855	2100	....	....	....	236.82	5.37	31517	....	....	14.55	13.20	11.05
Cougar III ST-280	1412	Die.	33345	2705	6	5.40x6.50	893	2100	....	....	....	246.13	6.28	32099	....	....	14.85	13.76	11.69
Panther III ST-310	1235	Die.	30850	None	6	5.50x6.00	855	2100	....	....	....	261.78	7.90	26757	....	....	13.95	13.09	11.02
Panther III ST-325	1236	Die.	31080	None	6	5.40x6.50	893	2100	....	....	....	261.94	7.93	28189	....	....	14.82	14.19	12.64
Panther III PTA-325	1355	Die.	33960	3140	6	5.40x6.50	893	2100	....	....	....	274.88	5.34	31876	....	....	14.26	13.45	11.55
Panther III PT350	1274	Die.	34000	2855	8	5.4x4.75	903	2600	(3)	....	....	305.48	6.51	32276	....	....	14.91	13.75	11.32
Panther IV KM-325	1543	Die.	33715	3955	6	5.50x6.00	855	2100	....	....	....	299.30	6.09	32700	....	....	16.04	14.79	13.00
Panther IV CM-360	1544	Die.	33740	3815	6	5.40x6.50	893	2100	....	....	....	334.37	6.03	32328	....	....	15.96	15.15	13.29
Panther IV SM-325	1550	Die.	33930	5030	6	4.921x5.906	674	2100	....	....	....	278.09	6.78	33651	....	....	17.12	15.98	14.22
Panther CP-1325 12 Sp.	1453	Die.	35870	410	6	5.40x6.50	893	2100	299.10	1002	299.10	266.97	6.95	33802	16.55	13.59	14.71	13.86	11.95
Panther CP-1360 12 Sp.	1455	Die.	39120	3860	6	5.40x6.50	893	2100	334.33	1002	334.33	294.07	6.89	36123	16.75	13.78	14.60	13.81	11.85
Panther CP-1400 12 Sp.	1464	Die.	43615	7165	6	5.40x6.50	893	2100	....	....	....	334.94	8.17	40272	....	....	14.92	14.12	12.07
Panther KP-1325 12 Sp.	1465	Die.	35815	605	6	5.50x6.00	855	2100	301.21	1002	301.21	267.87	6.93	34267	17.38	13.97	15.56	14.15	11.84
Panther KP-1360 12 Sp.	1456	Die.	39570	4090	6	5.50x6.00	855	2100	326.12	1002	326.12	291.14	6.92	36771	17.39	14.15	15.45	14.27	12.15
Panther KP-1400 12 Sp.	1463	Die.	43175	6640	6	5.50x6.00	855	2100	....	....	....	333.18	4.82	40803	....	....	15.87	14.54	12.10
Tiger II	1169	Die.	29930	2330	8	5.500x4.750	903	2600	....	....	....	270.21	6.73	28097	....	....	13.88	12.70	10.61
Tiger III ST450	1282	Die.	47370	4645	6	6.25x6.25	1150	2100	....	....	....	372.61	6.56	42610	....	....	14.18	12.70	10.56

(1) SN. 109-00328 and higher. (2) SN. 104-00331 and higher. (3) Equipped with hydrostatic PTO-105HP at 1000 RPM.

Versatile

256 Hydrostatic	1518	Die.	10460	1310	4	4.02x4.72	239	2500	84.36	540	85.08	82.81	5.49	9134	16.45	12.67	11.82	11.07	9.52
555	1331	Die.	25980	6330	8	4.625x4.125	555	2850	182.25	1000	184.35	154.20	4.56	23533	16.33	11.15	12.96	11.17	8.83
835 12	1356	Die.	28000	3720	6	5.50x6.00	855	2100	198.23	1009	198.23	179.07	6.13	26380	15.13	11.36	13.16	11.87	9.70
835 Series 3 12 Speed SN.835-83-036769 & higher	1482	Die.	27980	3595	6	5.50x6.00	855	2100	200.30	1009	200.30	181.14	5.34	25687	15.82	11.86	14.45	12.74	10.45
875	1279	Die.	29500	4980	6	5.50x6.00	855	2100	248.07	1008	248.07	228.35	9.12	24457	15.45	11.76	13.60	12.28	10.40
875	1332	Die.	29480	4160	6	5.50x6.00	855	2100	247.16	1008	247.16	221.66	4.86	26795	16.06	12.02	14.35	12.53	10.34
875 Series 3 12 Speed SN. 875-83-057906 & higher	1483	Die.	29500	3870	6	5.50x6.00	855	2100	252.67	1008	252.67	227.48	5.65	26725	16.82	13.06	15.25	13.73	11.82
895 12 Speed	1335	Die.	32500	7880	6	5.50x6.00	855	2100	....	....	....	261.63	6.45	29402	....	....	15.15	13.72	11.57
1150 8 Speed	1462	Die	46500	11360	6	6.25x6.25	1150	2100	....	....	....	400.29	5.92	43219	....	....	15.84	14.64	12.35

White

2-30 8 Speed	1373	Die.	3853	848	3	3.386x3.386	91.4	2600	28.33	540	24.50	25.81	8.35	2816	12.03	10.27	10.77	11.42	9.61
2-35 8 Speed	1374	Die.	3970	800	3	3.386x4.02	108.4	2400	32.84	540	30.94	30.37	8.00	2978	12.66	10.86	11.23	11.73	10.35
2-45 20 Speed	1395	Die.	6630	660	4	3.858x3.62	169.3	2250	43.73	540	36.62	37.32	3.97	4455	12.70	11.25	10.96	11.00	9.66
2-50 Field Boss	1231	Die.	6880	2325	3	3.940x4.330	158	2500	47.02	540	43.94	41.88	4.80	5640	15.80	13.03	13.26	13.49	11.97
2-55 16 Speed	1466	Die.	7055	860	4	4.02x3.94	199.4	2200	53.32	540	45.74	48.49	4.88	5037(1)	14.89	12.38	13.35	13.21	11.39
2-60 Field Boss	1232	Die.	8990	3830	4	3.940x4.330	211	2400	63.22	540	54.35	54.78	5.07	7352	17.63	13.82	14.40	13.87	11.93
2-62 20 Speed	1396	Die.	6875	635	4	4.016x4.33	219	2200	61.46	540	54.25	51.63	6.05	4695	16.31	13.85	13.76	13.49	12.08
2-65 16 Speed	1467	Die.	7110	790	4	4.02x4.65	235	2200	62.50	540	55.40	56.67	6.51	4827(2)	16.19	12.91	13.94	13.20	11.29
2-70	1212	Die.	9630	1000	6	3.875x4.000	283	2200	70.71	994	70.71	59.47	6.40	7550	14.56	12.28	11.92	12.13	10.72
2-75 16 Speed	1486	Die.	9625	1705	6	4.016x4.33	329	2200	75.39	1007	75.64	65.05	6.04	6487(3)	15.86	12.02	13.01	12.21	10.48
2-85	1213	Die.	12280	580	6	3.875x5.00	354	2200	85.54	1007	85.54	71.93	8.13	9309	14.62	11.72	12.24	11.64	9.71
2-88 16 Speed	1487	Die.	13615	None	6	3.875x5.00	354	2200	86.78	1007	86.78	74.67	6.51	9486(4)	15.71	12.69	13.62	12.74	10.79
2-105 Field Boss	1181	Die.	11810	None	6	3.875x5.00	354	2200	105.61	1007	105.61	90.81	6.34	9212	15.76	12.02	12.89	11.95	10.00
2-110 16 Speed	1468	Die.	13955	None	6	3.875x5.00	354	2200	110.52	1000	110.52	94.90	6.40	9500(5)	16.77	13.27	14.19	13.08	10.84
2-135	1275	Die.	16360	2225	6	4.56x4.87	478	2200	137.64	1000	138.03	117.67	8.93	11907	14.91	11.38	12.31	11.42	9.73
2-150 Field Boss	1182	Die.	16940	None	6	4.750x5.500	585	2200	147.49	1007	147.49	127.49	5.63	15059	14.46	11.90	12.07	12.14	10.63
4-150 Field Boss	1159	Die.	16960	None	8	4.50x5.00	636	2800	151.87	1000	152.45	133.34	6.34	16925	15.09	11.45	12.46	11.34	9.21
2-155	1276	Die.	16650	None	6	4.56x4.87	478	2200	157.73	1000	162.37	139.66	9.04	14512	15.38	11.91	12.69	11.53	9.97
4-175 Field Boss	1375	Die.	20420	None	8	4.50x5.00	636	2600	151.69	1000	151.29	133.72	6.39	19905	15.50	11.70	12.96	11.98	10.01
2-180	1287	Die.	18280	None	8	4.50x5.00	636	2800	181.89	1000	181.89	163.64	6.50	15499	14.36	11.66	12.85	12.48	10.56
4-180 Field Boss	1184	Die.	20600	None	8	4.50x5.00	636	2800	181.07	1000	182.30	156.54	4.59	20469	14.19	11.47	11.79	11.56	9.96
4-210 Field Boss	1318	Die.	23735	None	8	4.50x5.00	636	2800	182.44	1000	182.44	162.25	5.89	22934	14.26	11.53	12.34	12.10	10.25

(1) 6318 with front wheel drive engaged. (2) 6187 with front drive engaged. (3) 8026 with front drive engaged. (4) 12632 with front drive engaged. (5) 12944 with front drive engaged.

Yanmar

YM240	1199	Die.	3305	1355	2	3.543x3.543	70	2400	19.76	540	18.75	16.60	4.86	2442	15.05	12.64	12.36	11.95	10.37
YM226D	1442	Die.	3390	1080	3	2.95x3.35	68.7	2600	19.42	540	17.87	16.14	4.78	2073	15.07	11.67	11.92	10.93	9.26
YM276D	1443	Die.	4110	1405	3	3.31x3.35	86.2	2600	23.00	540	22.82	18.93	5.78	2412	14.35	11.06	11.06	10.57	8.90
YM336D	1444	Die.	5020	1615	3	3.31x3.54	91.3	2600	26.98	540	25.63	23.00	6.26	3086	14.27	11.32	11.39	10.66	9.64